The Bittersweet Taste of "Miracle Growth"

A political economy analysis of poverty, labour, and economic growth in the coffee heartlands of Laos and Rwanda

Inaugural dissertation

of the Faculty of Science,

University of Bern

presented by

Patrick Illien

from Vals GR

Supervisor of the doctoral thesis:

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Accepted by the Faculty of Science.

Bern, 07.06.2022

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ABSTRACT

Laos and Rwanda have recorded two decades of sustained and fast economic "miracle growth". The nature of these processes and their impact on the livelihoods of the rural population are, however, strongly contested. This dissertation adopts a comparative political economy approach to examine the under-researched employment nexus as a key mediator between growth and poverty. It builds on extensive mixed methods fieldwork in the main coffee-producing zones of Laos (the Bolaven Plateau) and Rwanda (Nyamasheke district), including two household surveys, ethnographic methods, and over 100 qualitative interviews ranging from semi-structured to life history interviews and focus group discussions.

The dissertation starts by developing a new framework to conceptualize pro-poor growth trajectories in developing economies (**paper I**). By integrating political settlements and pro-poor development strategy approaches, this framework not only accounts for the key mechanisms linking growth and poverty but also for the underlying political conditions. Its empirical application to Laos and Rwanda reveals that structural change has been limited in both cases and that most households continue to make a living in casual agricultural work or petty commodity production amid increasing land pressure. In Laos, inequality has risen, and growth has not been pro-poor in monetary terms, while in Rwanda, questions around official data do not allow a conclusive assessment. Nevertheless, non-monetary poverty has been significantly reduced in both countries, not least due to major investments in the provision of basic services.

Using the two household surveys, the dissertation zooms in on the coffee heartlands in the Bolaven Plateau and Nyamasheke (**paper II**) and identifies key markers of non-monetary poverty by conceptually and empirically comparing the Multidimensional Poverty Index (MPI) with the Extreme Deprivation Index (EDI) framework for the first time. Both locally adapted indices find that poor households are strongly characterized by lower levels of secondary education and literacy, rudimentary sanitation conditions, a relative lack of access to land, and a high dependence on casual agricultural wage employment. Additional regression and classification analysis shows that the EDI framework may be most appropriate in rural high deprivation contexts, whereas the MPI framework may be preferable in relatively low deprivation contexts.

Quantitative stratification, however, is limited in its understanding of the processes through which economic growth can both reinforce and reduce poverty. This dissertation therefore argues for a relational shift in the study of social differentiation and poverty to overcome these limitations. It undertakes a literature review within agrarian studies (**paper III**) to outline the implications of such a shift. Drawing on detailed mixed methods data, a relational approach is then applied to a case study of class dynamics in Nyamasheke (**paper IV**). It shows that a focus on labour relations – examining underlying drivers, functions, and power relations – between and within land-poor households can uncover avenues of accumulation and exploitation that would otherwise remain invisible. Instead of the commonly portrayed mass of undifferentiated smallholders, households ingeniously construct piecemeal livelihood patchworks under intense temporal and commodification pressure in localized patterns of micro-capitalism.

While the recent growth experiences in Laos and Rwanda have been astonishing indeed, it is a bittersweet success riddled with contradictions and mounting pressures on rural households. The integrated framework and relational approach presented here offer conceptual and methodological tools to help make sense of these processes both in the aggregate as well as in lived experiences on the ground. The dissertation further demonstrates that the MPI and EDI frameworks can be useful for beneficiary targeting as well as for programme or policy evaluation depending on the context, programme needs, and resources. Finally, it shows why safeguarding land access of the poorest and promoting policies to tighten rural labour markets should be key ingredients of any pro-poor development strategy.

ACKNOWLEDGEMENTS

Undertaking this PhD was an adventurous journey with many highs and lows and everything in between. I am indebted to the support of countless people who have carried me and shaped my path. In particular, I would like to thank:

Prof. Dr. Peter Messerli, Director of The Wyss Academy for Nature at the University of Bern, for supervising this dissertation.

Dr. Sabin Bieri, Director of CDE and manager of the FATE project, for acting as my co-supervisor, supporting my endeavours from design to publication, and being incredibly open to all my ideas. She enabled me to undertake the survey in Nyamasheke, allowing this comparative study to be conducted.

The entire FATE project team and especially our partners in Laos and Rwanda. I would like to thank particularly Dr. Eliud Birachi, Dr. Saithong Phommavong, and Dr. Maliphone Douangphachanh as well as the staff at the Alliance of Bioversity International and International Center for Tropical Agriculture (CIAT) in Rwanda and the National University of Laos for accommodating me in their institutions, supporting the organization of my fieldwork in every aspect, and teaching me about local customs and procedures. A special mention goes to my fellow FATE PhD students Marie-Luise Matthys, Outhoumphone Sanesathid, Ildephonse Musafili, Sushant Acharya, and Alejandro Romero for all the joy and wonderful adventures across the world. I am especially grateful to Marie-Luise for sharing her contagious motivation, always lending an ear, and putting up with my frustrations.

My incredible research assistants and interpreters, Phothong Chanthavilay, Rénovat Muhire, and Mukamana Theonille, without whom my fieldwork would not have been possible. They not only helped me overcome language barriers but also provided invaluable advice and support on all field-related aspects, including logistics, cultural conventions, and sensitivities. Their warm-hearted demeanour, humour, and empathetic communication skills were key to the success of our interviews. I appreciated and learned a lot from our joint reflections when chasing across all those hills together. You were my daily companions through thick and thin, and I am immensely grateful for having had you on my side.

The survey teams in Laos and Rwanda, including drivers, research assistants, and enumerators, who worked tirelessly in sometimes difficult circumstances, went to meet respondents in remote areas, and provided valuable feedback for the research process.

All the unnamed research participants, host families, and other collaborators who opened their doors, gave their time, and shared their stories with me. I am truly grateful for the kindness you showed me.

Prof. Dr. Helena Pérez Niño, Assistant Professor at the International Institute of Social Studies, who kindly agreed to join forces to co-author two research papers. She generously shared her deep expertise of agrarian political economy and was a mentor and an inspiration of what true scholarly debate and co-authorship can be. Her insistence for me to be more precise, refine my arguments, and ask the "so what?" question undoubtedly improved my exposition.

PART I:
RESEARCH DESIGN AND SYNTHESIS

1 Background and Overview

1.1 Introduction and Overview of Research Papers

Laos and Rwanda have achieved high and sustained economic growth rates over the past two decades. Annual GDP per capita growth averaged 5.4% in Laos and 4.6% in Rwanda over the period from 1999 until 2019 (World Bank, 2022, see also figure 1). Growth regimes with annual per capita growth rates of 5% or more have been defined as "miracle growth" (Sen, 2015, p. 37). The average growth rates of Laos and Rwanda, coupled with the fact they respectively recorded 14 and 10 years in this period with growth rates above 5%, qualifies them in this category (see for example Behuria & Goodfellow, 2017, who use this term to describe Rwanda's post-genocide economic recovery). However, success has a bittersweet aftertaste as these growth experiences are riddled with contradictions, and their socio-economic impacts need to be carefully assessed both in the aggregate and in lived experiences on the ground.

Building on extensive mixed methods fieldwork, this dissertation aims to explore poverty dynamics, social differentiation, and labour relations in the coffee heartlands of Laos and Rwanda from a political economy perspective and to place them in relation to these countries' recent economic growth trajectories. It therefore directly contributes to research on Sustainable Development Goals 1 ("end poverty in all its forms everywhere"), 8 ("promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all") and 10 ("reduce inequality within and among countries") (United Nations, 2015, p. 14). The thesis particularly focuses on the under-researched role of rural labour relations (Oya, 2013) in mediating the link between economic growth and poverty through the so-called "employment nexus" (Osmani, 2004, p. 2). My overall guiding question is:

How have the recent high-growth trajectories of Laos and Rwanda shaped social differentiation and poverty, and what has been the role of labour relations in this process?

The dissertation is composed of four individual research papers that are reproduced in part II and have been published or are under review in peer-reviewed academic journals. I am the first and corresponding author of all four articles. Each tries to answer a pair of specific research questions, outlined in table 1, that advance scholarship on conceptual, empirical, and methodological levels and illuminate aspects of the overarching research question.

Paper I is situated at the national level of analysis and offers a new framework to conceptualize pro-poor growth trajectories in developing economies. This framework provides an innovative and pragmatic advance on previous scholarship by integrating an analysis of the key mechanisms that link growth and poverty (based on the literature on pro-poor development strategies, see Saad-Filho, 2007, 2016) with an analysis of the political conditions underlying these growth-poverty trajectories (based on the political settlements literature, see Khan, 2010, 2018). The framework is then empirically applied to understand the economic growth paths of Laos and Rwanda across the last two decades and to assess to what extent the two countries have implemented pro-poor development strategies and how they have done so. This is not only the first comparative study of the political economy of Laos and Rwanda but also the first paper to use political settlements analysis to study the distribution of power in Laos.

Paper II is situated at the meso level, zooming in on the coffee heartlands of Laos (the Bolaven Plateau) and Rwanda (Nyamasheke district). It provides a profile of rural poverty by comparing two recent frameworks to measure non-monetary poverty: the global Multidimensional Poverty Index (MPI, see Alkire & Santos, 2014) and the Extreme Deprivation Index (EDI, see Sender et al., 2018). This is the first study to test the EDI and to systematically compare it to the MPI. The two frameworks are applied to new

survey data from the two coffee-growing regions. In each setting, locally adapted variations of both indices are calculated on the same sample, allowing a direct comparison of the resulting categorizations. This allows us to test the usefulness of the MPI and the EDI frameworks and to identify key makers of poverty in rural Laos and Rwanda with a particular focus on employment characteristics.

Table 1: Overview of research papers with hyperlinks to summaries of key insights (in the title column) and the published versions (in the journal/status column).

#	Research questions	Title	Authors	Journal/status
I	• How can the political conditions and key mechanisms linking growth and poverty be conceptualized to account for pro-poor economic development? • To what extent have Laos and Rwanda implemented pro-poor development strategies, and how have they done so?	The political economy of pro-poor growth in Laos and Rwanda compared	**Illien, P.**, Bieri, S.	Review of International Political Economy: under review
II	• To what extent do the MPI and EDI frameworks provide a reliable and valid measure of the poorest households? • What are key markers of rural poverty in Laos and Rwanda?	Measuring non-monetary poverty in the coffee heartlands of Laos and Rwanda: comparing MPI and EDI frameworks	**Illien, P.**, Birachi E., Douangphachanh, M., Phommavong, S., Bader, C., Bieri, S.	Journal of Development Effectiveness: published (2022)
III	• How have researchers in agrarian studies operationalized research on social differentiation in fieldwork? • What are the conceptual and methodological implications of a relational shift in the study of social differentiation?	From theory to the field and back again: fieldwork-based research on social differentiation in agrarian studies	**Illien, P.**, Pérez Niño, H.	Journal of Agrarian Change: under review
IV	• How can class relations be accounted for in a context of widespread but limited land access? • What are the drivers, functions, and power relations underlying the key mechanisms of labour mobilization in Nyamasheke?	Agrarian class relations in Rwanda: a labour-centred perspective	**Illien, P.**, Pérez Niño, H., Bieri, S.	The Journal of Peasant Studies: published (2021)

Having analyzed recent growth and poverty trajectories in Laos and Rwanda, papers III and IV focus on social differentiation and the role of rural labour relations as key mediators between economic growth and poverty.

Paper III takes the lack of methodological discussion in agrarian studies as its starting point and asks how researchers in agrarian studies have operationalized social differentiation in fieldwork. It undertakes a literature review to identify the tools researchers have used to translate conceptual debates about social differentiation into fieldwork practices. Two main approaches are contrasted conceptually and methodologically: a stratification approach using classifications based on socio-economic characteristics and a relational approach that studies the nature and implications of social interactions among groups of

respondents. While stratification exercises are useful as an initial step in the study of social differentiation, the paper ultimately argues for a "relational shift" and outlines the conceptual and methodological implications stemming from this.

Paper IV finally applies such a relational approach at the micro level and provides an empirically rich mixed methods case study of rural class and labour relations in Nyamasheke, the main coffee-producing region of Rwanda. This shows how a class-relational approach can shed light on processes of social differentiation in a generally land-poor context with no sharp polarization between groups of landowners and groups of rural proletarians. It also contributes to filling an important research gap by exploring the diversity and vibrancy of rural labour institutions in sub-Saharan Africa (Oya, 2013).

In addition to the methodological contributions made individually by the four research papers (particularly papers II and III), this dissertation strongly emphasizes the need for a transparent and reflexive research practice (O'Reilly, 2012) and advances methodological discussions around social science fieldwork. The methodological design was carefully developed and tested with research partners. Methodological techniques were fine-tuned to reflect the conditions at each research site. This, along with the specific integration of both quantitative and qualitative techniques, innovates the methodological approaches in partnership-based agricultural and development-related research.

This PhD is part of the Feminization, Agricultural Transition and Rural Employment FATE project (see http://www.fate.unibe.ch) of the r4d programme (project number 171191) funded by the Swiss Agency for Development and Cooperation (SDC) and the Swiss National Science Foundation (SNSF). The FATE project works with regional partner institutions to investigate the socio-economic impacts of agricultural export production in four mountainous and land-locked developing countries across three continents: Bolivia, Laos, Nepal and Rwanda (Bieri, 2014). This is particularly relevant because agriculture, on which the economies of many developing countries remain based, has been argued to be the most efficient sector at reducing poverty (Christiaensen et al., 2011; de Janvry & Sadoulet, 2010; Dethier & Effenberger, 2012; Ivanic & Martin, 2018). Export-led agricultural growth is particularly promising in this respect, as argued in research paper II: at the macro level, it provides much needed foreign exchange earnings and offers opportunities for value-chain upgrading, while also often stimulating local labour markets and incentivizing producers at the micro level (Cramer et al., 2020). At the same time, agrarian change of this kind also carries significant risks, as this dissertation will make clear, and can reinforce exclusionary processes (Hall et al., 2011) and increase social differentiation (McMichael, 2013).

Part I of this thesis (consisting of six chapters including references) frames the research undertaken for this PhD by describing the research design and providing a synthesis across all four research papers. Following the present introduction, the remainder of chapter 1 sets out the study context in the coffee heartlands of Laos and Rwanda. The political economy framework that underpins this dissertation is outlined in chapter 2 together with a discussion of the key concepts used in the four research papers. Much space is devoted to chapter 3 which systematically and transparently outlines the methodological design and mixed methods fieldwork carried out in Laos and Rwanda that lie at the heart of this dissertation. Chapter 4 summarizes the key insights and findings of the four research papers. Finally, chapter 5 synthesizes the key contributions of this PhD at the conceptual, empirical, and methodological levels and presents policy implications. For each of these levels, avenues for future research are suggested. Part I concludes with an outlook calling for a progressive political economy approach towards sustainable development. Part II contains the research papers in their published, submitted, or revised form, and part III provides methodological and other appendices.

1.2   Selection of Research Sites and Study Context

Being part of the FATE project, this dissertation contributes to the project goal and case studies outlined in section 1.1 by providing a comparative political economy analysis of the coffee heartlands in Laos and Rwanda. This section builds on and expands the description of the study sites contained in papers II and IV. While situated in vastly different contexts, the two research sites share some important structural features that are relevant for this comparative exercise. First, they are both located in *land-locked, agrarian-based least developed countries with rapid and sustained economic growth over the last two decades.* Between 1999 and 2019, annual per capita GDP growth was averaging 5.4% in Laos and 4.6% in Rwanda (World Bank, 2022, see figure 1), although both remain classified as "Least Developed Countries" by the United Nations Conference on Trade and Development (UNCTAD, 2021).[1] Despite some structural change, agriculture remains key in Laos and Rwanda, both in its share of total gross value added – 17% in Laos and 29% in Rwanda in 2018 – and especially in its share of total employment – 74% and 62% respectively in 2018 (de Vries et al., 2021). Paper I examines the recent growth trajectories and assesses the extent to which they can be characterized as pro-poor. It also discusses the authoritarian political settlements in both countries that have emerged from violent conflicts and enacted wide-ranging modernization packages that restructured not only the economy but also society at large.

Second, *coffee is a key agricultural export good, and its export value has been rising over roughly the last two decades.* It was important to choose the same labour-intensive and economically important cash crop across both case studies in order to ensure comparability and relevance to my research questions. Coffee fulfils these criteria. Rwanda and Laos both liberalized their coffee markets in the 1990s and export well over 90% of their coffee (Epprecht et al., 2018; MINAGRI, 2019). Coffee accounts for about 14% of agricultural export value in Laos (World Bank, 2018) and about 15% in Rwanda, where coffee is the second most important agricultural export product after tea (MINAGRI, 2019). While export quantities have increased more in Laos than in Rwanda over the last two decades, the value of coffee exports has been rising significantly in both countries as depicted in figure 2.

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[1] The COVID-19 pandemic has plunged Laos into its first recession since the Asian financial crisis in 1998, and Rwanda has similarly fallen into its first recession since the 1994 genocide with poverty rates in both countries projected to increase (World Bank, 2021a, 2021b). Fieldwork was conducted before the pandemic reached either country. The present analysis is therefore restricted to the period up to spring 2020.
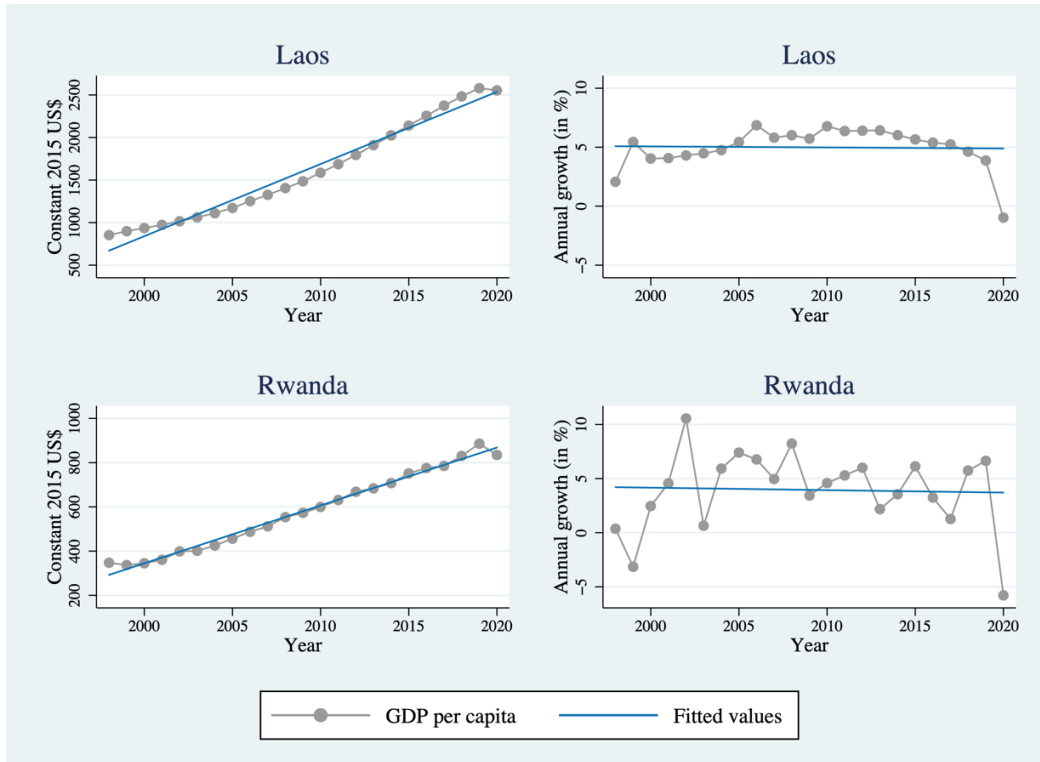
Figure 1 (reproduced from paper I): GDP per capita growth in Laos and Rwanda: 1998–2020. Source: World Bank (World Bank, 2022).
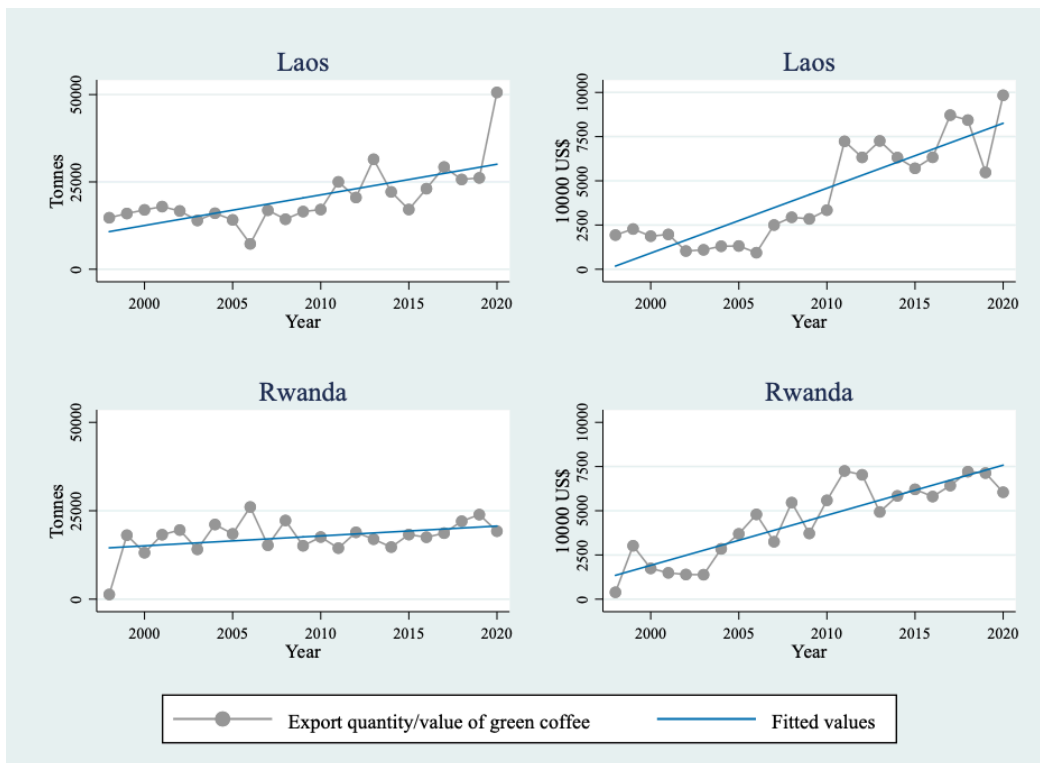
Figure 2: Export quantities and values of green (unroasted) coffee in Laos and Rwanda: 1998–2020 (Source: FAO, 2022).

I therefore chose the main coffee-producing regions, or coffee heartlands, as my research sites: the Bolaven Plateau in southern Laos (see figure 3) and Nyamasheke district in western Rwanda (see figure 4). Both have favourable environmental conditions for coffee production (see Toro, 2012, for Laos and Nzeyimana et al., 2014, for Rwanda) and are located at altitudes in the range of 1,000 to 1,300 m.a.s.l (Epprecht et al., 2018, although most sampled villages are located at slightly lower levels of elevation) and 1,800 to 2,500 m.a.s.l. (MINAGRI, 2013) respectively. Over 80% of the total coffee production area in Laos is spread across the rich volcanic soils of the Bolaven Plateau that ranges across Champasak, Salavan and Xekong provinces (Epprecht et al., 2018). In Rwanda, Nyamasheke district not only has the highest share of coffee-producing households (NISR, 2012) but also the highest number of coffee trees nationally (Migambi, 2014).

In Laos, the FATE project purposely selected a diverse sample of six villages on or near the Bolaven Plateau to have some with and without road access, and with and without large-scale concession areas, as well as to include different ethnic groups and administrative districts (four villages had already been sampled by the FATE project for a 2015 household survey, and two were added by the project for the 2018 survey). In Rwanda, I purposely chose four sectors of Nyamasheke to include main coffee-producing areas as well as some for which detailed secondary data were available, i.e. close to the previous Rwamatamu Commune, the research site of Erlebach (2006) who conducted the first study on wage labourers in Rwanda. I then selected two villages per sector based on systematic random sampling, resulting in eight villages. The overall sampling procedure is summarized in figure 5.

In Rwanda, coffee was introduced by German missionaries in 1904 and today more than 98% of coffee produced is of the Arabica variety (Guariso et al., 2012). In Laos, on the other hand, coffee was introduced around 1920 by French settlers and has for the most part been dominated by the Robusta variety (Galindo & Sallée, 2007), although Arabica production has been rising and even recently surpassed Robusta production (data obtained from the Lao Coffee Association). Arabica is also the majority crop planted at our Lao field sites. Arabica is claimed to be of higher quality and can be sold at higher prices than the Robusta variety but is more susceptible to diseases and more labour-intensive (Galindo & Sallée, 2007; UNCTAD, 2020).

Despite its relatively short history, coffee has taken on strong economic and cultural significance at both research sites. This is probably best captured in the "myth of origin" as told by an elder Rwandan respondent when I asked him how he came to be a coffee farmer:

> *When the whites arrived, they told the farmers who were having big livestock: "Those cows you have, they'll finish. Now this is the cow we're giving you. This cow is the coffee. We're going to give you a cow, which will not fall [off the side of the mountain and die, as sometimes happens]. That cow, you'll own and milk for many years, but that livestock won't help you, no. But the cow which will not fall off the mountain and go down into the valley and die: this is the coffee". That's how coffee came here.*

This quote stands out in a context where cattle has traditionally been of high cultural and economic importance (C. Newbury, 1988). It exemplifies the hopes put into export agriculture and the physical constraints imposed by the mountainous Rwandan landscape.

Figure 3: Location of the Bolaven Plateau in Laos. Map created by author, GIS data from DIVA-GIS (2021) and Natural Earth (2021).
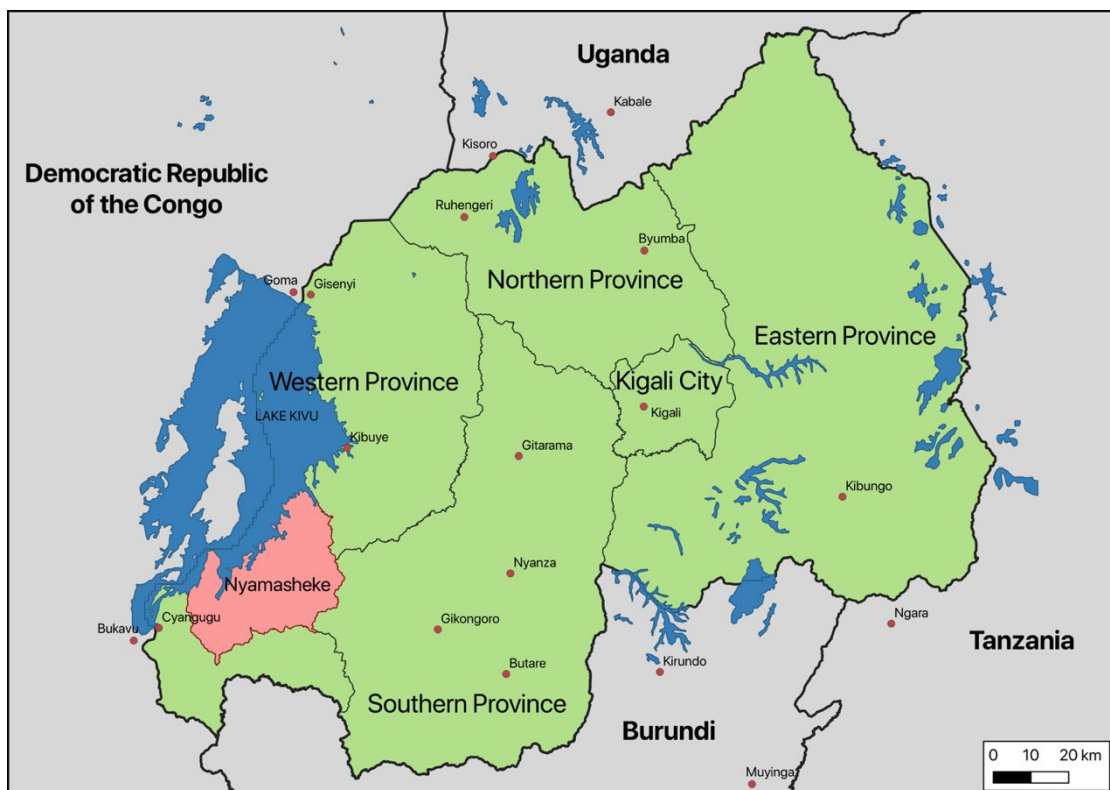
Figure 4: Location of Nyamasheke in Rwanda. Map created by author, GIS data from DIVA-GIS (2021) and Natural Earth (2021).

In addition to the commonalities listed above, the coffee heartlands of Laos and Rwanda are marked by four key features. First, there is *increasing pressure over land* at both research sites, albeit to a much stronger degree in Nyamasheke. Rwanda has the highest population density in mainland Africa with 525 people per square kilometre of land area, whereas it is extremely low in Laos (much lower than in all its neighbouring countries) with 32 people per square kilometre (World Bank, 2022). High population densities, hilly terrain and increased commodification pressures go a long way to explaining the acute land shortages in Nyamasheke where the mean operational holding of the entire sample (excluding households with no farming land) is 0.29 ha – not enough for many households to survive without engaging in alternative income-generating activities.[2] On the Bolaven Plateau, on the other hand, respective landholdings are much larger with an average of 2.84 ha. Nevertheless, land pressures have been increasing over the last two decades, notably due to a steep rise in land leases and concessions of state land since around 2000 (Schönweger et al. 2012) and the related establishment of large-scale coffee plantations, mining projects, and dams (Delang, Toro, and Charlet-Phommachanh 2013). These land deals often involve high-level corruption and the forced displacement of local communities (Baird, 2011; Kenney-Lazar, 2012), and their economic and ecological impacts have been assessed critically (Hett et al., 2020; Nanhthavong et al., 2022).

This connects to the second feature which is the *different organization of the coffee value chains* in the two countries. In the hilly terrain of western Rwanda, coffee is mostly grown by smallholder farmers, and mechanized large-scale plantations are largely absent. The Rwandan state intervenes strongly in the coffee sector and recently instituted a zoning policy requiring all farmers to sell their coffee cherries to designated coffee washing stations within their area (Gerard et al., 2017). The coffee market is markedly less regulated in Laos where smallholder farmers coexist with large-scale mechanized plantations. Farmers are free to process their coffee themselves, sell to local traders, or sell directly to the plantation companies in their area (UNCTAD, 2020). An unknown amount is smuggled, predominantly to Vietnam (Southichack, 2009, see also Norasingh et al., 2020, on trade mispricing in Laos). In both countries, the majority of coffee is exported as green bean coffee, although domestic roasting capabilities are slowly starting to increase, notably in the specialty coffee sub-sector (AgriLogic, 2018; UNCTAD, 2020). There are also several important producer cooperatives that process and market their own coffee.

Third, *both regions are marked by visible and invisible scares of a violent past.* The more recent wars in Laos and Rwanda should not be seen in isolation but as deeply connected to the colonial histories and violent conflicts that preceded them (e.g. the social revolution in Rwanda between 1959 and 1962, see Lemarchand, 2009). Nevertheless, the present discussion is limited to the two most recent wars as they were on an altogether different scale, directly led to the establishment of the current political settlements and happened in the lifetime of many of our respondents.

The Laotian civil war (1959–73) took place against the background of the Second Indochina War and is associated with heavy US involvement in the so-called "secret war" that left Laos as "the most heavily bombed country per capita in history" (Russell, 2013, p. 96), leaving behind continued threats from unexploded ordnance, particularly in the countryside. Bomb impacts are still visible at our research sites and the invisible scares of trauma remain deep as many of our respondents remember vividly the tragic events associated with the war.

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[2] Demographic and ecological factors undoubtedly played a role in the Rwandan genocide, but ecological determinism fundamentally ignores the political process that was at the roots of this tragedy (D. Newbury, 1998).

In Rwanda, no analysis can ignore the impact of the civil war in the early 1990s that culminated in the 1994 genocide and resulted in the deaths of an estimated 500,000 to 1,000,000 Tutsi and moderate Hutu (Lemarchand, 2018). This tragedy was the result of a combination of different contributing factors that lie beyond the scope of this text but have to be seen in the light of an elite struggle for political power and a deep-seated socio-economic crisis that unfolded particularly in rural areas, exacerbated by a drop in coffee prices in response to which farmers uprooted an estimated 300,000 coffee trees (C. Newbury, 1995). The hopes placed in coffee as "the cow that never falls" were sorely disappointed. Our research sites are close to the previous Rwamatamu Commune, which had a large concentration of Tutsi and was one of the regions most affected by the genocide, resulting in a high concentration of female-headed households (Erlebach, 2006). Like in many places in Rwanda, genocide memorials are scattered along the villages, and several respondents exhibited trauma symptoms. Psychological research has documented long-term mental health consequences of the genocide and found particularly high rates of post-traumatic stress disorder (PTSD) and depressive and anxiety symptoms (Rieder & Elbert, 2013).

Thus, even though the wars in Laos and Rwanda are over, their impacts are omnipresent. The conflicts restructured land relations and resulted in massive population displacement and resettlements; they led to the securitization of development and establishment of rigid national discourses that restrict political freedoms and seek legitimacy through claims of national liberation and improved socio-economic performance all while creating a climate of fear to control dissident; and finally, the trauma of war lives on in the often injured bodies, fractured social relations, psychological scars, and memories of its survivors.

A fourth core feature that stands out in the Bolaven Plateau as well as in Nyamasheke is *significant migration*. In southern Laos, there are large inflows of remittances from predominantly young and often female workers migrating to neighbouring Thailand (Manivong, Cramb, and Newby 2014; Phouxay 2017). In addition, there is an important seasonal migration pattern from the lowlands in southern and central Laos to the Bolaven Plateau for work on coffee plantations of all sizes. This migration pattern remains under-researched (Insisienmay & Philavanh, 2018, provide a rare study). The Great Lakes region of Africa is also marked by massive migration movements that are strongly associated with regional conflict dynamics (Lemarchand, 2009). In Rwanda, two refugee waves stand out in particular (see Ansoms & Claessens, 2011, p. 9): "old-caseload refugees", mostly Tutsi who had formerly fled the massacres between 1959 and 1963 in the wake of the social revolution and returned once the Tutsi-dominated Rwandan Patriotic Front (RPF) had taken power at the end of the genocide, and "new-caseload refugees", predominantly Hutu who fled to the neighbouring Democratic Republic of the Congo (DRC) out of fear when the RPF invaded the country in the early 1990s. Often "old-caseload refugees" started cultivating the land left behind by "new-caseload refugees" who would later try to reclaim it upon their return. This resulted in competing claims on land and intensified the already high pressures on agricultural land in particular. The government of Rwanda sought to deal with this situation through land-sharing, villagization, and land registration policies with rather problematic outcomes that increased social tensions (see Leegwater, 2011, C. Newbury, 2011, and Pottier, 2006, on the three topics respectively). Among our research participants in Nyamasheke, there were many respondents in our sample that returned from the DRC, some directly after the genocide, some more recently, and who faced major obstacles in trying to access land – having, for example, lost proof of previous ownership and/or returned to find their former land being cultivated by someone else. Clearly then, migration patterns have had a large impact on land relations in Rwanda. Yet, from a snapshot perspective of the people currently staying in our sampled villages, labour markets themselves are far more localized in Nyamasheke than they are on the Bolaven Plateau with most households hiring locally.

2   Conceptual Framework

This chapter starts by outlining the overall political economy framework that underpins this dissertation and all four research papers, before discussing key themes and showing how they will be used in the respective papers.

2.1   Political Economy and the Limits of Neoclassical Economics

This PhD takes a political economy approach as its guiding analytical and methodological framework. On the one hand, political economy can be thought of as merely an interdisciplinary perspective that postulates a relationship between two discrete phenomena – politics and economics (Chandhoke, 1994). This is not the way it is used here. Instead of seeing economics and politics as merely related by an external link, the alternative view argues that economics and politics are constituted by each other (Chandhoke, 1994). Therefore, I use a general definition of political economy as the "methodologically systemic analysis of the (historically acknowledged capitalist) economy by whatever means and with whatever focus" (Fine, 2011, p. 216, footnote 5). This builds upon the work of classical political economists (e.g. Smith and Ricardo) and Marx, which all share some similarities that set them apart from neo-classical economics. These similarities include (Milonakis & Fine, 2009):

- Methodological holism (primacy of the social totality or collectivities, understood as more than the sum of its parts) as opposed to methodological individualism.

- The understanding of economic relations as inseparable from social relations, which makes the analysis historically specific, capable of incorporating power and typically interdisciplinary in character.

- A focus on long-term economic development, specifically on accumulation, class, and the state (identified as the three major preoccupations of political economy by Byres, 1995).

These characteristics make political economy uniquely positioned for studying the four issues at the heart of this dissertation: economic growth, labour relations, poverty, and class and gender.

At the basis of the political economy framework used here is a critical realist ontology and epistemology that include the following elements: belief in an existence of reality independent of the observer (ontological realism) and recognition that knowledge is socially produced and thus fallible (epistemological relativism) without giving way to radical scepticism as critical realism acknowledges that there are rational grounds for privileging one theory above another (judgmental rationality) (Buch-Hansen & Nielsen, 2020). Critical realism posits that reality is characterized by open systems with rare event regularities as patterns vary across time and space. There are, however, underlying structures and mechanisms in the so-called deep domain of reality which, while not directly observable, can be inferred by scientific inquiry (Buch-Hansen & Nielsen, 2020). For this, critical realism advocates conceptual precision and a holistic perspective based on interdisciplinary methods that relate the abstract to the concrete and vice-versa (Buch-Hansen & Nielsen, 2020).

This stands in sharp contrast to the highly deductive approach of neoclassical economics that conceives of the world as a closed system behaving with law-like regularities based on atomistic elements that are randomly ordered (Deane & Van Waeyenberge, 2020). Neo-classical, or mainstream, economics is characterized by methodological individualism that typically understands economic outcomes as the result of optimization exercises by individual agents (Deane & Van Waeyenberge, 2020). Methodological

individualism implies, first, that there are no systemic relations and that macro dynamics are reducible to micro-foundations and, second, that this deductive logic is applied universally, leaving little space for context and resulting in an ahistorical analysis (Deane & Van Waeyenberge, 2020). Neoclassical economics then employs a microeconomic technical apparatus – centred around utility and production functions, optimization, efficiency, and equilibrium theory – that is also increasingly applied to macroeconomic analysis (Fine, 2016). Although extremely restricted by its assumptions, the neoclassical framework has been applied to the analysis of phenomena that traditionally lay under the purview of other social science disciplines through a process termed "economics imperialism" (Fine, 2016, p. 16): while mainstream economics continues to rely upon a restrictive technical apparatus, it widens its scope of application by bringing back in "what had been left out to establish it [i.e. mainstream economics] in the first place" (Fine, 2016, p. 16).

The difference between political economy and neoclassical economics, as well as the latter's subordination of the former, can be traced in the field of development economics. The "old" development economics emerged in the 1950s and operated largely within a political economy framework. Despite considerable diversity, old approaches can be characterized by two fundamental features: "First is the idea that development involves profound historical, economic and social change. Second, not surprisingly, is the recognition of interdisciplinarity, of combining development economics with what is now known as development studies" (Fine & K.S., 2006, p. 1). This is the approach followed here. The "new" development economics came to prominence in the 1980s as part of the rise of neoliberalism, leading to the establishment of the Washington Consensus, and applied the neoclassical framework to the study of development. In fact, as a consequence of the universal, deductive principles at the heart of neoclassical economics, development economics ceased to exist as a separate field since neoclassical models had been thought to apply to developed and developing countries alike (Karwowski & Van Waeyenberge, 2020). Following the failures of the Washington Consensus, the "newer" development economics came to the fore in the late 1990s with the transition to the post-Washington Consensus associated with Joseph Stiglitz, then Chief Economist of the World Bank. Providing a more nuanced neoclassical theory centred around market imperfections and failures, it nevertheless remains restricted by the same limitations described above (Van Waeyenberge, 2006). Similar to its latest iteration associated with behavioural economics and randomized control trials, what has been termed the "newest" development economics (Fine et al., 2016) still does not provide a viable alternative to the "old" political economy of development. Instead, by undermining the role of power, systemic relations, structural change and interdisciplinary thinking, it has hollowed out and depoliticized the meaning(s) and analysis of development. For these reasons, this dissertation places itself firmly in the tradition of the "old" political economy of development. The next sections outline how this tradition has informed the conceptualization of the key topics of interest here: economic development, labour relations, poverty, as well as class and gender.

2.2   Economic Growth, Structural Change, and Agrarian Questions

From a political economy perspective, economic development involves a structural change from low- to high-productivity activities that has historically been associated with industrialization and the expansion of capitalism (Cramer et al., 2020). The study of economic growth can therefore not proceed in the abstract or be read off of capital endowments but has to be rooted in the concrete analysis of a historically contingent social formation and its structural features. In short, *growth exists only concretely* (Saad-Filho, 2011, p. 339, italics in original).

This understanding is the starting point for the comparative study of recent growth trajectories in Laos and Rwanda provided in research paper I. The article draws on literature on pro-poor development strategies (Saad-Filho, 2007, 2016) and political settlements analysis (Khan, 2010, 2018) to develop an integrated framework that helps conceptualize pro-poor growth trajectories in developing economies. This framework links economic growth and structural change to relational poverty (see 2.4) via the employment nexus (see 2.3). This is then used to assess to what extent Laos and Rwanda have implemented pro-poor development strategies and how they have done so.

In agrarian political economy, economic growth is often encapsulated in the classic agrarian question of capital which is concerned with "the continuing existence in the countryside of a poor country of substantive obstacles to an unleashing of the forces capable of generating economic development, both inside and outside agriculture" (Byres, 2012, p. 13). By exploring the penetration (or absence thereof) of capitalist relations in the countryside, the classic agrarian question problematizes capitalist transformations (Wood, 2002) and reveals the historical diversity in the organization of production (encapsulated for example in the mode of production debates reviewed in Thorner, 1982a, 1982b, 1982c). Over time, new approaches to framing the agrarian question have been developed and different variations can be identified in contemporary agrarian studies (Akram-Lodhi & Kay, 2010a, 2010b). Of particular relevance here is the agrarian question of labour (Bernstein, 2006) that characterizes contemporary rural settings in an era of globalized capitalism. What they all share is a preoccupation with the drivers and implications of changes in the organization of production, reproduction, and exchange. Research papers III and IV are informed by this approach to agrarian political economy.

2.3   Labour Relations and the Employment Nexus

The world of work is central for an analysis of the political economy of development. At the macro level, for example, rising labour productivity is not only a crucial driver of economic growth but in many classic theories labour is also underpinning value creation (and, for Marx, underpinning exploitation). Similarly, labour migration – whether resulting from industrialization, the restructuring of value chains, the depletion of natural resources, or other factors – is a key feature of contemporary society. Moreover, labour movements have historically been a powerful political force. At the micro level, the study of labour relations provides a unique entry point in the lived experiences of different social groups and biographies of individual people and households. Cutting across levels of analysis, labour relations are linked to property relations, form the basis of class analysis, and are also at the core of questions about gender equality, feminization, and empowerment (see. 2.5).

It may thus come as a surprise that there has been a widespread "employment neglect" (Amsden, 2010, title) in development thinking in general and in research on rural wage employment (Oya, 2013; Oya & Pontara, 2015c) in particular. The reasons are multiple and range from ideological blindness and misleading assumptions about the rural poor, such as the myth of a homogenous set of self-employed farmers, to methodological biases in household surveys (see Oya, 2013; Oya & Pontara, 2015b). Indeed, an important strand of recent research has empirically demonstrated the vibrancy of rural labour markets across the Global South (see for example Oya & Pontara, 2015c; Van den Broeck & Kilic, 2019).

As a result of the central role of work for the organization of production, reproduction, and exchange, understanding labour relations is indispensable for the analysis of poverty. Given, on the one hand, that economic growth exists only concretely and is intrinsically bound to historically contingent social relations (including labour relations) and, on the other hand, that poverty is relational (see 2.4) and work, in whatever form, is the basis of subsistence and reproduction, it becomes clear that labour relations are

a key mechanism linking economic growth to poverty. This idea is at the basis of the so-called employment nexus, as elaborated by Osmani (2004), which "may be summarised by the proposition that employment opportunities for the poor offer the most crucial link between growth and poverty" (Osmani, 2004, p. 2). In fact, "achieving better employment conditions and providing adequate social protection fundamentally rely on the success of structural change in expanding productive employment" (Oya et al., 2013, p. 7).

For the employment nexus to be strong, growth is necessary at low levels of economic development to expand the employment potential (the growth and elasticity factors in Osmani's framework), and the poor must be able to integrate into this process and benefit from it (the integrability factor in Osmani's framework). This not only requires that the poor can access more employment opportunities but also that the quality of employment (working conditions, remuneration, etc.) increases. A key limitation of Osmani's framework, however, is that it fails to problematize the growth process itself, thereby ignoring the ways in which growth may increase poverty (see 2.4). There is a lack of engagement with power dynamics, processes of social differentiation and associated distributional outcomes. To overcome these limitations, the framework can be broadened by putting work and labour *relations* (whether paid or unpaid) at its core. In this way, poverty can both be analyzed relationally, as the positive or negative terms on which the poor are integrated into the growth process, and residually when emphasizing the lack of employment per se and thus highlighting the frequent problem of dispossessions in rural areas without any meaningful alternatives of gaining a living (although relational analysis would be preferrable here as well as these dispossessions do not happen in a vacuum and at times surplus labour may even be intentionally created; see Li, 2011). This broadening of the employment nexus also enables a more explicit investigation of the way in which labour relations are controlled, resisted and transformed and may ultimately be linked to more labour-centred forms of development (Selwyn, 2016a).

All four research papers engage with labour relations as a key mediating factor between growth and poverty. Paper I finds the relatively weak employment nexus in Laos and Rwanda to be a key limitation of their respective growth strategies. Paper II compares key features of the rural labour markets in Laos and Rwanda. In both cases, it finds that type of employment is an important marker of poverty and that many of the poorest households depend on casual agricultural wage employment in particular, thereby advancing understanding of the employment nexus. Paper III situates labour relations in the study of social differentiation and outlines the methodological implications of a labour-centred view. Finally, paper IV provides a detailed discussion of the drivers, functions, and power relations underlying labour relations in Nyamasheke. It shows that putting labour relations at the centre of class analysis enables a much more nuanced view that reveals forms of differentiation in land-poor contexts with no sharp class polarization. This, in turn, can better account for varied livelihood profiles and inform more targeted policy design.

2.4   Relational Poverty

From a political economy perspective, contemporary poverty cannot be understood in isolation but has to be located in the contradictory and historically specific process of capitalist development. A relational approach to poverty would therefore "investigate the causes of rural poverty in terms of *social relations* of production and reproduction, of property and power" (Bernstein, 1992, p. 24, italics in original). For this, the critical realist position outlined in 2.1 is crucial "because the explanatory framework is no longer closed, empirical research can investigate the possibility that poverty is the result rather of inclusion [as opposed to exclusion] into meso and macro economies, societies and polities" (Corta, 2010, p. 28). This stands in contrast to the more common residual approach that "views poverty as a consequence of being

'left out' of processes of development, on the assumption that development brings economic growth which, sooner or later, raises everybody's income" (Bernstein, 1992, p. 24).

From a relational perspective, economic growth in capitalist systems not only produces extreme levels of wealth but also creates poverty (Harriss-White, 2006). It may lead, among others, to social exclusion and adverse incorporation (Hickey & du Toit, 2013). What matters therefore are the terms of inclusion (Oya, McKinley and Bargawi, 2013); on what terms and with what distributional outcomes the poor are incorporated into the processes of production, reproduction, and exchange. Therefore, "it cannot be assumed that trickle down will automatically happen as a result of growth. Instead, to find out whether or not growth benefits the poor it is necessary to bring production, accumulation and the condition of labour back into the picture, thus making the underlying mechanisms visible" (Wuyts, 2011, p. 5). These underlying mechanisms are structured by class and gender relations, which are in turn mediated by labour relations and explored further in section 2.5.

The relational approach to poverty underlies all four research papers. It underpins the conceptualization and empirical analysis of pro-poor growth provided in paper I. Paper II directly tackles poverty measurement and shows that appropriate non-monetary indicators can identify the poorest households in rural settings and illuminate how they are situated in production and labour relations. Paper III argues for a relational shift in the study of social differentiation, and paper IV focuses on labour exploitation and gendered power and class relations that explain some of the micro-dynamics of poverty in Nyamasheke.

2.5   Class and Gender

The preceding discussion has shown that growth trajectories, labour market dynamics and poverty are intertwined with the way production, reproduction, and exchange are organized. How these processes are structured, changed, resisted, and experienced – as well as how people are integrated in or excluded from them, and with what implications – shapes and is shaped by a range of social structures and relations. Among them, class stands out due to its material basis and universal character. Importantly though, "class relations are *universal but not exclusive* 'determinations' of social practices in capitalism. They intersect and combine with other social differences and divisions, of which gender is the most widespread and which can also include oppressive and exclusionary relations of race and ethnicity, religion and caste" (Bernstein, 2010, p. 115, italics in original). Indeed, except for caste, these are all at play at our research sites and enter the analysis to different degrees.

Drawing from research on social differentiation in agrarian studies and Marxist political economy, paper III outlines the methodological implications of a class-relational approach. This is then directly applied to an in-depth case study of Nyamasheke in paper IV: it shows how class relations operate at the micro-level in a context where there is no clear polarization in ideal-typical capitalists and proletarians. The article further engages with the literature on gender and work (e.g. Kabeer, 2012), disaggregates employment data by gender and explores how gendered dynamics and divisions of labour (both within households and in the labour market) interact to create a triple burden of production, reproduction, and discrimination in the labour market for many women in our sample. Importantly, the study incorporates unpaid work or work paid in kind and pays particular attention to the vulnerable position of many female-headed households. Indeed, paper II finds a strong association between female household headship and MPI/EDI-poverty in Rwanda. However, this should not hide that female-headed households are a diverse group, nor should it lead to the impression that poverty is the direct result of household characteristics at the expense of an analysis of wider gendered inequalities and vulnerabilities in line with a relational approach (Chant, 2004). Ethnicity would be another important factor to understand poverty and land and labour relations

in western Rwanda (Dawson, 2018) but has not been investigated here as discussion of ethnic identifiers has been banned since the 1994 genocide (Huggins, 2017). In Laos, ethnic minority status is strongly associated with MPI/EDI-poverty as shown in paper II.

3 Methodology

Methodological discussions in research articles are selective and short by necessity, often leaving readers in the dark about important elements of the research process. This chapter outlines the research design and methods used across the dissertation in a systematic and comprehensive manner, particularly as this dissertation makes substantial methodological contributions (see 5.1.3). In an effort to increase transparency and to provide helpful resources to other researchers, several extensive methodological tools developed as part of this PhD are made publicly available in the online appendices (see part III) and are introduced and contextualized in the following sections.

3.1 Research Design

The critical realist perspective outlined in section 2.1 is conducive to mixed methods research that uses statistics to observe wider patterns and in-depth qualitative analysis to reveal underlying mechanisms (Buch-Hansen & Nielsen, 2020). Building on this, this PhD employs a comparative mixed methods research design. Comparative methodologies in the social sciences have been heavily influenced by political science where discussions are typically dominated by the logic of "most-similar systems design" or "most-different systems design" (della Porta, 2008). Neither strictly applies here. Section 1.2 identified similar structural features between the two research sites that invalidate a most-different design. At the same time, it would be inappropriate to interpret the case selection as a most-similar design given the huge historical, geographical, and social differences between the two countries. Instead, this dissertation takes the common experience of significant coffee export production and sustained economic growth in two agrarian-based, least developed post-conflict countries as a starting point and assesses its drivers, trajectories, and outcomes at the local and national levels in different contexts. Despite obvious benefits, there is an inevitable danger in doing comparative analysis:

> *The comparativist, plundering as he must the work of specialists, encounters the reservations and suspicion of those specialists not themselves comparativists. ... It is a problem which demands immense vigilance on the part of the comparativist. It also requires certain qualities. The comparativist, having displayed, perhaps, the necessary "foolhardiness" in confronting large themes ... may be doubly foolhardy: in not only addressing large themes, but in risking judgement according to such standards. Yet, the potential analytical rewards are great. (Byres, 1995, pp. 574–575)*

Against this background, Rigg (2005, p. 9) criticizes development geography for its "failure to see beyond the case study, and [for] a general avoidance and apparent fear of comparative work". He rightly notes that the goal of comparative analysis is not to suggest a given development trajectory but rather to reflect on one country's challenges in the light of the experiences of another. This is what I intend to do in paper I and, to a lesser extent, in paper II. Given the richness of our empirical material as well as space limitations, paper IV leaves the comparative remit to provide an in-depth case study of labour and class relations in Nyamasheke.

In comparing cases across time, like I do in paper I, an appropriate time period has to be selected. Rigg (2005), however, notes two main problems associated with this task. First, it is inconsistent to identify a traditional state from which change may be investigated since change is part of any society, and descriptions of traditional societies are often overdrawn and romanticized. Second, however, merely stating that change is constant is self-evident and an analytical dead end. These valid concerns can nevertheless be moderated by focusing on transformations that modify "established ways of operation, over and above the usual patina of adaptation" (Rigg, 2005, p. 15). The opening of the economy in Laos in

the 1980s and early 1990s and genocide and civil war in Rwanda in the 1990s changed the rules of the game and led to the establishment of a new post-conflict political settlement in Rwanda. Paper I investigates the high-growth period of both countries during the two decades preceding the COVID-19 pandemic, which plunged them into their first recession since the 1998 Asian financial crisis and the 1994 genocide respectively (World Bank, 2021a, 2021b) and whose ramifications are not yet fully known. Rigg (2005) also suggests looking at the way change is encountered at the local level and how it is reworking livelihoods directly and indirectly (who is in a position to adapt and benefit, and who is not?) can have a moderating effect. This is done in paper IV, which investigates localized trajectories of accumulation and exploitation under increasing land pressures in Nyamasheke and, to a lesser extent, in paper II, which compares key markers of poverty in rural Laos and Rwanda.

As outlined in section 2.1, a political economy framework embedded in a critical realist ontology and epistemology is neither deterministic nor based on methodological individualism but historically specific and investigates the social relations and material conditions underlying a social formation. This implies a holistic and interdisciplinary approach that links locally specific manifestations to wider societal tendencies. For this endeavour, extended fieldwork is particularly fruitful as it provides rich and contextualized empirical detail on both directly and only indirectly observable aspects. In fact, theory and fieldwork are co-dependent. In the words of Joshi (1981, p. 456): "I realize now more fully that if fact-finding without theory had no direction, theory without fact-finding has no solidity … The two are therefore complementary and not mutually exclusive." Hence, while theory allows us to recognize patterns and make sense of a messy reality, fieldwork enables us to get face to face with the complexity of concrete manifestations and diverse lived experiences (Joshi, 1981). Within this process though, scholarly analysis can only ever be partial as it is not only limited by the chosen theory or method and by the accessibility of empirical data but also by the researcher's biases and positionality and the research participants' reaction to the researcher's presence. The research process should therefore be informed by a reflexive practice that is aware of these limitations (O'Reilly, 2012). I adopted such a reflexive practice throughout the study, e.g. by compiling detailed field notes and engaging with ethical questions before, during and after fieldwork. This methodological section therefore provides a systematic and transparent account of the research process and field encounters from a reflexive perspective.

My research employed a range of mixed methods drawn from economics, agrarian studies, sociology, development geography, and ethnography. Altogether, I spent about 8 months in Laos and Rwanda, the majority of which directly at our research sites. In line with its mixed methods research design, this dissertation has a quantitative (QUAN) and a qualitative (QUAL) strand and uses a mixed methods sampling procedure based on Teddlie and Yu (2007). The study combines multilevel, concurrent and sequential mixed methods sampling as outlined in figure 5. It is multilevel as it combines probability and purposive sampling at different levels of the study and investigates units of analysis that are nested within one another. In each country, the multilevel strategy is the same for both strands down to the selection of the study villages covered by the survey; then it bifurcates. Whereas the surveys (QUAN strand) were conducted in all selected villages, the bulk of qualitative fieldwork (QUAL strand) took place in a sub-set of these villages. The sampling strategy is also sequential as survey data were used to identify target households for qualitative interviews and life histories (see 3.4). Finally, the purposive sampling of focus group discussants in Laos (QUAL strand), for example, was concurrent but independent from the probability sampling used in the Laos survey (QUAN strand). The criteria for the purposive selection of the study sites have been detailed in section 1.2. The systematic random sampling used in the QUAN strand to identify survey households is discussed in section 3.3 and the procedures for identifying participants in the QUAL strand are explained in section 3.4.
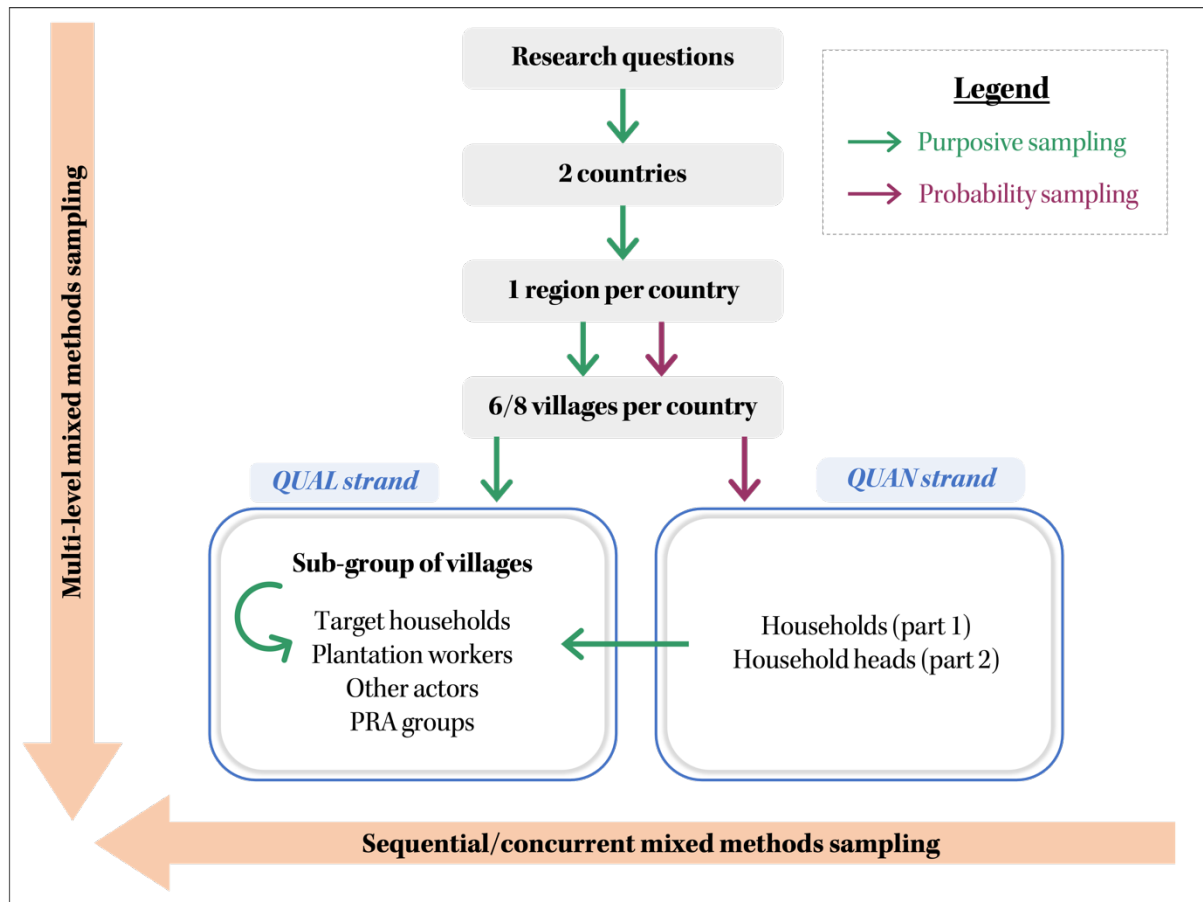
Figure 5: Overall sampling procedure using mixed methods sampling.

3.2   Research Partnerships and Access

Social science fieldwork requires thorough preparation including the settling of any administrative issues as much in advance as possible, a basic understanding of local customs and habits as well as the country's political and economic history, and the command of needed methodological tools and materials. These preparations allowed me the space to be flexible to adjust to challenges and discoveries on the ground, including to aspects of importance to research participants, as detailed in my blog article (Illien, 2019).

In addition to these more individual aspects, collaboration with local partners was vital throughout my fieldwork – from planning to publishing. Together, we ensured that the activities contributed to the interests and goals of all involved stakeholders in line with the agreements of the FATE project (e.g. the sharing of survey data). I benefitted greatly from the infrastructure and long-term partnerships of the FATE project, specifically the invaluable logistical and administrative support of our national coordinators and partner institutions in Laos and Rwanda. This included, among others, support in the preparation of the necessary research permits and documentation; the contracting of enumerator teams, drivers, and research assistants; the provision of office space; and assistance in the form of regional and technical expertise. In Laos, the household survey was an extension of a previous survey conducted by the FATE project in 2015. Our Lao partners at the National University of Laos led and coordinated the implementation of the survey. I provided technical support in the design, coding, enumerator training, pilot testing, and in-field data cleaning, and I participated in the enumeration with my research assistant. As the project was well known in the selected villages, it was easy for me to access it as a project member. Subsequent visits for qualitative fieldwork required additional administrative steps and renewed

introductions to local authorities but could build on previous visits and project contacts. Village leaders facilitated access to households and accommodation within the villages. Being interested in local political economy dynamics, we also interviewed a range of other actors (see 3.4) some of whom we could approach directly. We reached out to a number of large-scale plantation companies, but it was generally difficult to secure access permissions from plantation managements. In particular, our request to undertake participant observation living on-site and working alongside plantation workers was denied. We were nevertheless granted access to some plantations and processing centres and could freely move around and interview employees on multiple occasions.

In Rwanda, the situation presented itself differently. The FATE project had only previously worked in Northern Province. For the comparative study with coffee production in Laos, we decided to research the main coffee-producing region in Rwanda – Nyamasheke – as well. I was in charge of leading this survey from design, sampling, and implementation up to data cleaning. Once again, our partners at the Alliance of Bioversity International and International Center for Tropical Agriculture (CIAT) in Rwanda provided invaluable support. After receiving the required approvals, I went on a one-week sampling mission together with a driver and my research assistant to get to know the context, introduce ourselves at different levels of local government, and establish an up-to-date sampling frame (see 3.3.). Like in Laos, we built on these contacts in subsequent visits and followed local protocol by announcing our arrival, intentions, and departure each time. Village leaders and local authorities again facilitated access to households and accommodation with local host families within or near the villages. (Re-)negotiating access is thus an ongoing activity in the research process, requiring time and flexibility but also providing important insights into local political dynamics.[3] Revisits and informal ethnographic tools (see 3.4.2) were particularly useful as they helped us build trust and expand our network. This facilitated access to actors beyond the target households and for which snowballing and formal or informal introductions were key.

As a final note it should be mentioned that there were also at times physical obstacles to gaining access. Storms or bad road conditions made certain areas less accessible, and safety had to come first. However, whenever possible and agreed with local authorities, we invested a lot of time and energy in visiting people in their surroundings, i.e. typically at their homes or in their fields, for several reasons. For one, research in rural settings may miss important aspects or exclude certain populations if it does not attempt to include remote locations. Second, research participants may feel more restricted in their testimonies if they are interviewed on their employer's premises (Cramer et al., 2016). Equally important, some people may not wish to invite the researchers into their house, or it may be inappropriate for them to do so. Where possible, we tried to let the participants choose the place and often sat outside together. At times, visiting participants in their surroundings required us to postpone or cancel a meeting, to deviate on the route, or to take boat trips on Lake Kivu. Usually, however, it involved walking across hilly terrain as households are often very dispersed, particularly in Nyamasheke. This allowed space for spontaneous encounters and time to reflect between meetings or to plan ahead. It also showed a certain level of commitment to the research participants, similar to the experience described by Thomson (2010):

> I walked everywhere … and took public transportation only when I had to go any extended distance … This gave me a certain cachet as it became evident to many people that I was ready and willing to travel considerable distances on foot over steep hills, on hot humid days, as well as during the rainy season to meet them where they lived and in the context of their daily activities. Some of the most

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[3] Indeed, Fujii (2018) shows how quite a lot can be learned from interviews that do not happen.

revealing conversations took place in the hills surrounding the valley where I lived, where I went for a walk every evening after dinner. (p. 25)

3.3   Quantitative Data Collection and Analysis

As mentioned, quantitative data were collected with two household surveys: one in Laos and one in Rwanda. The focus was on capturing household characteristics, production activities, and the diversity of labour relations that household members engage in. These data enabled me to measure non-monetary poverty and its key markers (paper II), to quantify land ownership and rural labour market characteristics (papers II and IV), and to identify household class positions (paper IV).

The Laos survey was conducted between late March and early May 2018 with over a dozen enumerators plus additional drivers and researchers. The Rwanda survey took place between October and November 2018 with a group of eight enumerators, one research assistant, two drivers and myself as the survey leader. Both surveys involved the following key elements:

- **Systematic random sampling:** Once the survey villages had been selected following the procedure outlined in sections 1.2 and 3.1, we used systematic random sampling to identify households for the survey from village household lists (i.e. the sampling frame) provided by local authorities. In Laos, this was the procedure followed for the sampling of the two villages added in 2018 and also for the sampling of the four initial villages in 2015 (this initial sample was re-interviewed in the 2018 survey and replacement households were added as needed). In Rwanda, all household lists were individually cross-checked with the respective village leaders during the sampling mission to bring them up-to-date on recent movements.

- **Comparative survey design:** Previous FATE project surveys implemented in the first project phase were taken as a starting point and then adapted to the goals and contexts of the second project phase. The overall structures of the Lao and Rwanda surveys were similar in order to enable the comparative analysis contained in paper II (appendix 1 details the Rwanda questionnaire as an illustration). Nevertheless, we made several improvements after the Laos survey and adapted some questions and answer codes to the local context in Rwanda. All changes were documented in a detailed change log. In line with the FATE project design, the surveys consisted of two parts: part I contained the household module and questions about individual household members and their activities. It was answered by a person knowledgeable about the household (typically the household head(s), together or alone, depending on who was around). Part II was asked separately to the two household heads, typically husband and wife, if they were available, and contained individual questions about decision-making power, time use, and nutrition, among others. Coordinating the interviewing of those separate parts was a logistical challenge as it often required two enumerators at the same time for part II, and households had to be revisited a second time as one of the household heads was frequently absent.

- **Innovative questionnaire:** We implemented recent best practice to capture the extent and diversity of employment relations outlined in Oya (2015). Specifically, we included a detailed employment matrix for a reference period of the last 12 months to record not only main activities but also occupational multiplicity and seasonal or casual employment activities. Second, this included "any form of work *for another person or entity* in exchange of [sic] *any kind of compensation* whether in kind (including land, for example) or in cash" (Oya, 2015, p. 51, italics in original). The duration and frequency of activities, as well as amount and kind of compensation,

were recorded, among others. Third, we also asked about the household's use of paid labour and of unpaid agricultural work (whether by household members or others) as well as its provision of unpaid agricultural work by household members to others. Fourth, we made sure to capture land rentals and sharecropping which are very important in Rwanda as shown in paper IV. The surveys contained a wealth of other questions and modules (see appendix 1), notably on household characteristics, education, nutrition, living standards, and consumer goods used in paper II.

- **Translation and local adaptation:** The survey was translated into Lao by our research partners at the National University of Laos and into Kinyarwanda by the research assistant and enumerator team leaders during a two-and-a-half-day translation workshop in Rwanda. In both instances this involved substantial discussion about the theoretical and local meanings of key concepts such as wage employment. The goal was to ensure that the survey was contextually adapted and culturally appropriate while maintaining conceptual equivalence.

- **Enumerator training and pilot testing:** In each country, we conducted a multi-day enumerator training. This included an introduction to the project and each questionnaire module; a discussion of key concepts such as different forms of employment and payment, as well as of measurement units, with examples; practice rounds and feedback to enumerators and survey leaders; the coordination of logistical and administrative aspects (timeline, accommodation, finances, etc.); explaining informed consent and tips for probing and asking questions; and handling of the tablets and SurveyCTO software. In Rwanda, we divided the group into two teams, each with a team leader and three enumerators. After practising the questionnaire on each other during the training, we also did a one-day pilot test in each country in rural communities that were not part of the survey. This was an invaluable exercise as it gave us the opportunity to clarify the enumerators' questions and pointed out several design or phrasing issues that were subsequently improved upon. Changes were documented in detailed change logs.

- **Computer-assisted personal interviews (CAPI):** The questionnaires were programmed with XLSForm in excel. Data were collected with the SurveyCTO Collect software using the questionnaires. Using internal consistency checks, skip rules, and supervising through daily uploads, CAPIs minimize data entry errors (Oya, 2015). Each enumerator collected answers with a handheld tablet and was equipped with a pen and notebook to record questions and comments.

- **Local guides:** Village leaders together with local guides informed inhabitants about our project and provided directions to the enumerators. Whenever possible, the enumerators visited the respondents close to their houses, although sometimes research participants came to meet the enumerators at a central location (for which we tried to conduct the surveys outdoors with distance between respondents). Depending on the village, we introduced ourselves with an official welcome discourse.

- **Regular briefings and in-field data cleaning:** Regular, often daily, briefings were held with enumerators to discuss coordination and logistical questions, substantive issues regarding the questionnaire and any questions based on the day's experience. I summarized key points in my field notes. If needed, data entry errors could be directly corrected. Data were then regularly uploaded to the SurveyCTO server, enabling live monitoring.

- **Gifts:** We provided small gifts (e.g. plastic buckets that could be useful for washing or coffee harvesting, etc.) to all survey participants as a token of appreciation for their time.

- **Data cleaning and analysis:** I devoted considerable time to an extensive and systematic cleaning of both datasets. Data cleaning is an important task with potentially wide-reaching implications for analysis. Its purpose is to reduce errors, minimize bias, increase consistency and therefore comparability, and prepare the data for analysis. I developed detailed step-by-step data cleaning guidelines for the FATE project from tidying the dataset and performing consistency checks to labelling and anonymizing the data (see appendix 2). I then cleaned both the Laos and Rwanda datasets following these guidelines and wrote detailed do-files in Stata to provide an audit trail for full traceability. The main challenge was correctly and uniquely identifying households for each survey form (one for part 1 and usually two separate forms for part 2) when the household IDs where incorrectly specified as this required time-consuming additional, and sometimes manual, checks. The final datasets consisted of 714 households in Laos and 233 households in Rwanda. Analysis procedures are described in detail in the respective research papers. I used predominantly descriptive statistics for the analysis of papers I (mainly based on secondary data) and IV (mainly based on our own survey). Paper II employs inferential statistics, including regression analysis, to draw conclusions not just about the surveyed households but about all households in the sampled villages (1873 in Laos and 1038 in Rwanda). Variables were aggregated and transformed as required for analysis. I made an effort to contextualize the data in a meaningful way "to write a story about the numbers that is both compelling and accurate" (Weinberg & Abramowitz, 2020, p. 1). All data cleaning and analysis was undertaken with Stata 15.1.

3.4 Qualitative Data Collection and Analysis

I conducted most of my qualitative fieldwork alone together with the crucial and invaluable support of a research assistant who at the same time served as my interpreter. As soon as I arrived for the sampling mission in Rwanda and the survey in Laos, I started exploring the local surroundings, meeting people, and documenting field notes and photos. Most of my qualitative fieldwork was, however, conducted in a sub-set of sampled villages shortly after the survey (May-June 2018 in Laos and November-December 2018 in Rwanda). Together with previous visits during the survey or otherwise, I had visited each of those villages repeatedly so was already familiar to the inhabitants.

The sub-set of villages for qualitative fieldwork was purposively chosen to capture a diverse range of key socio-ecological profiles. In Rwanda, I included three villages: one which was easily accessible and close to the market on the main road, one remote village with lake access providing opportunities for fishing, and one remote village that was far from Lake Kivu. I returned to those three villages again for a second round of fieldwork in February and March 2019. In Laos, I included four villages across two districts in the qualitative strand: two near a main road and two far from the main road (one from each category in each of the districts). Of the two villages near a main road, one was dominated by large-scale concession companies, whereas the other was not. These two villages were then revisited for a second round of fieldwork in February 2020 (resources did not allow revisiting all four villages).

The methods used in the qualitative strand of this dissertation can be divided in three main groups: different forms of qualitative interviews; ethnographic methods; and in Laos only, focus group discussions based on participatory rural appraisal (PRA) tools. These methods complement each other as they provide different entry points to approach the life worlds of our research participants, observe patterns, and discover underlying structures and relations. This is particularly important for a critical realist perspective that tries to understand poverty and labour from a relational view. It allowed us to capture the drivers, functions, and power relations underlying mechanisms of labour mobilization and social differentiation

in Nyamasheke (paper IV), the structure of the coffee value chain in Laos and Rwanda (paper IV and to lesser extent paper II), and perceptions of poverty and deprivation (the background for paper II), among others. The following sections outline sampling strategies, fieldwork activities, and analysis for each group of research methods.

Before doing so, some preliminary remarks are in order regarding two issues that cut across all my qualitative fieldwork: language barriers and the collaboration with research assistants (RAs). Both have major impacts on the research process but are typically ignored in most accounts (for discussions see Caretta, 2015; Chiumento et al., 2018; Deane & Stevano, 2016; Fujii, 2013; Middleton & Cons, 2014; Turner, 2010). A reflexive practice requires that these aspects are addressed. I tried to do this through careful preparation, detailed documentation, and open dialogue throughout. Preparation included familiarization with the relevant methodological literature and also with local customs and contexts. I cooperated with local partners to discuss the administrative and contractual framework and to identify appropriate RAs. I then had a transparent conversation with the RAs about the timeline, goals, and planned activities so that they understood what the research activities entailed before agreeing to it. At the beginning of the fieldwork, I conducted a short interpreter training based on the following components outlined by Chiumento et al. (2018):

- *Researcher and interpreter introductions: games to get to know one another's family/educational background and previous experiences of research.*
- *Introduction to the research topic.*
- *Introduction to key principles of qualitative interviewing.*
- *Guidance on the interpreter's role in interviews or quality checks.*
- *Guidelines on approach to interview interpreting, emphasising use of the third person, retaining conceptual equivalence, and reporting back to the researcher independent exchanges with participants.*
- *Exercises to translate the topic guide, exploring foreseeable interpretation difficulties.*
- *Key principles of research ethics, stressing confidentiality, professional conduct, and self-care. (p. 610)*

Importantly, I encouraged an open discussion with the RAs throughout our fieldwork regarding ways of working together and their needs as well as my own. We gave each other feedback along the way and often jointly reflected upon our experiences in the field. This allowed us to make necessary adjustments on the spot, provided us a safe outlet for dealing with stressful situations, and helped me gain a deeper understanding of the context.

Speaking a local language is obviously an enormous advantage for a researcher but the comparative nature of my fieldwork as well as the complexity of both Kinyarwanda and Lao (not to mention other languages spoken in Laos by ethnic minorities), prevented me from seriously learning either language in an acceptable way. These language barriers required me to address the methodological challenges stemming from cross-language research. I did this by, first, documenting language issues in a "translation audit trail" where I engaged point-by-point with Squires' (2009) methodological recommendations and Croot et al.'s (2011) critique of them. Second, I discussed conceptual equivalence and interpretation issues with my RAs as outlined above. Third, I familiarized myself with key terms, local land and labour institutions, and basic phrases. Despite having the support of interpreters, this was indispensable to navigate conversations, adequately interpret the data, and build trust with research participants. Fourth, I made a deliberate choice to work with lay interpreters as the role of RAs in this case extended well beyond interpretation to

also include cultural translation, joint negotiation of access, organization of logistical aspects and, in the case of Laos, help facilitating group discussions. It was therefore more important to have someone who was comfortable with these tasks, used to and knowledgeable about agricultural settings, interested in learning about the research topics and with whom I could have a good working relationship rather than having a professionally-trained interpreter (see also Chiumento et al., 2018, on the use of lay interpreters). Even if I had mastered both languages at intermediary level, there are clear advantages to working with interpreters who are culturally competent to grasp nuanced meaning, local idioms and to not skew the selection of interviewees to more educated interviewees with better language skills (Fujii, 2013). Fifth, I made an effort to develop transcription guidelines (see 3.4.1) that made the role of research assistants visible (Edwards, 1998).

In most interviews, I spoke directly to research participants in English or French and the RAs translated this into the relevant local language and vice versa. Nevertheless, RAs were encouraged to take on a more active conduit role as co-interviewer as described in Chiumento et al. (2018):

> *[RAs] were requested to avoid filtering or evaluating responses prior to translation as far as this was possible. However, interpreters were given scope to clarify understanding and independently interact with participants ... interpreter's [sic] independently asked probing questions, but were requested to convey these interactions to the researcher to render transparent the interpreter's role in shaping interviews. This balance prioritised the content of translation, whilst recognising the limits to lay interpreters' topic knowledge and skills in qualitative interviewing. (p. 611)*

3.4.1   Qualitative Interviews

The core component of the qualitative fieldwork consisted of over 100 semi-structured qualitative interviews (SSIs). The focus was on individual or household level interviews. In each country, I used purposive stratified sampling (Robinson, 2014) to identify target households from our survey sample based on quantitative data (sequential mixed methods sampling). Three stratification criteria were used: household headship (ensuring female-headed households were included in the sample), land ownership and village (tables 2–4). These are meaningful criteria given the socio-ecological diversity of villages, the importance of and rising pressures on land, and the prevalence of female-headed households in our sample in Rwanda (about 30%) and the particularly vulnerable position they are in (see for instance Carter, 2018, and Newbury & Baldwin, 2000). This resulted in a sample of 24 target households in the first round of fieldwork in Rwanda. In the second round, nine of them were re-interviewed. With six of these I conducted an in-depth follow-up interview based on a new interview guide that explored emerging themes and gaps from the first interview as well as new topics. I also conducted life histories with three widowed, divorced, or separated women (see table 3).

In Laos, the first round of qualitative fieldwork already started during the survey and therefore sequential mixed methods sampling was not possible. Instead, the village leaders identified some coffee-producing or wage working households with whom to conduct exploratory semi-structured interviews. In addition, I also identified some interviewees opportunistically or via snowballing. In total, we conducted seven exploratory household interviews in the first round. In the second round of fieldwork, I benefitted from the survey data to systematically select target households in a sequential manner. Like in Rwanda, I used purposive stratified sampling according to the same criteria and recorded two life histories in the same fashion (table 4).

Table 2: Stratified sampling of target households in Rwanda for the first round (2018).

	Survey participants			
	Female- and male-headed households: SSI		**Female-headed households: SSI**	
	Land-rich	Land-poor	Land-rich	Land-poor
Village 1 (on main road)	2	2	2	2
Village 2 (remote with lake access)	2	2	2	2
Village 3 (remote without lake access)	2	2	2	2

Table 3: Stratified sampling of target households in Rwanda for the second round (2019).

	Participants of first round		
	Female- and male-headed households: SSI	**Female-headed households**	
		SSI	Life history
Village 1 (on main road)	1	1	1
Village 2 (remote with lake access)	1	1	1
Village 3 (remote without lake access)	1	1	1

Table 4: Stratified sampling of target households in Laos for the second round (2020).

	Survey participants			
	Female- and male-headed households: SSI		**Female-headed households**	
	Land-rich	Land-poor	Land-rich	Land-poor
Village 1 (close to main road without concession companies)	2	2	1 (life history)	1 (SSI)
Village 2 (close to main road with concession companies)	2	2	1 (SSI)	1 (life history)

In addition to these household interviews and across both rounds of fieldwork, we conducted 21 SSIs in Laos and 14 SSIs in Rwanda with a diverse range of actors relevant for the topics of interest or important to help us understand the context better. These were selected purposively or via snowballing and included, among others, village leaders, exporters, plantation owners, washing station managers, field supervisors and cooperative leaders. Furthermore, we separately interviewed two additional groups of people. In one of the Rwandan villages, there was a group of food sellers at the roadside with whom we conducted 4 brief, individual and structured interviews about their type of work, the sourcing of their produce and other related topics. In Laos, we benefitted from the opportunity to access two different large-scale coffee plantation estates. We were permitted to wander freely around the site and conducted 10 brief individual or group interviews with plantation workers or supervisors to gain unique insights into their working

conditions. Unfortunately, however, our request for an extended stay in the workers' quarters and to conduct participant observation alongside workers in the fields was denied.

Most interviews were semi-structured in nature, understood here as interviews where

> *the researcher has a list of questions or series of topics they want to cover in the interview, [elaborated in] an interview guide ... but there is flexibility in how and when the questions are put and how the interviewee can respond. The interviewer can probe answers, pursuing a line of discussion opened up by the interviewee, and a dialogue can ensue. ... [Nevertheless, semi-structured interviews] do provide some structure for comparison across interviewees in a study by covering the same topics, even in some instances using the same questions. (Edwards & Holland, 2013, p. 29)*

I developed separate interview guides for each type of interview partners (e.g. target households, authorities, washing station managers) outlining main themes and narrative questions as well as individual prompts or follow-up questions to ensure comparability among each group – see appendix 3 for examples of interview guides. For each main theme, I started by asking narrative questions to initiate the conversation. These were open narrative impulses that aimed to elicit long answers describing the participants' experiences. Depending on the breadth and depth of the answers, I would ask more specific follow-up questions to ensure that the pertinent information was provided. These questions could be asked directly but they could also be used as a "checklist" to see whether the most important topics had been covered in the interview. If questions were not relevant for specific interviewees, I would adapt them during the interview. The interview guides were assessed based on the criteria set out in McIntosh and Morse (2015). Probing and prompting techniques were directly applied orally and inspired by Edwards and Holland (2013) and Fujii (2018). Typically, interviews with target households were more in-depth and longer than interviews with other interview partners. Questions centred around coffee production, poverty, work, and property relations in whatever form. Crucially from a relational perspective, I not only asked about the characteristics of certain social institutions or activities but also how they were experienced, what barriers they implied, why someone would (not) participate in them, what conflicts ensued and how they were resolved, and how these institutions have changed across time, among others.

Additionally, I conducted three life history interviews with target households in Rwanda and two in Laos as outlined in tables 3 and 4. Life histories, or life stories, offer unique illustrations of research participants' trajectories and experiences across time. They can identify pivotal moments in an individual's life and track changes in well-being and livelihood strategies (Bird, 2011b). Moreover, life histories have been used effectively in mixed methods research designs to investigate rural labour markets (Sender & Cramer, 2021). In particular, life histories can be adapted to yield "productive biographies" that reconstruct individual or household work and (re-)productive trajectories.[4] These are especially valuable for a relational perspective as argued in paper III. To this effect, I developed a life history interview guide that integrates some of these elements and focuses on changes in location, land access, work, assets, food security, and health (see appendix 4). This guide was constructed from a template based on Bird (2011b, 2011a). In a second step, I adapted the questions and added topics based my research interests and the local context with a view to approach some form of "productive biography". In the third step, I adjusted the guide to respect time constraints and the do-no-harm principle (especially by avoiding re-traumatization and addressing safety concerns). Most importantly, I abandoned a purely open and chronological approach, which would be the standard for life histories, for a more thematic approach that traces key topics over time. I asked more

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[4] I owe this term to my colleague Helena Pérez Niño.

detailed questions than usual for a life history in order to control the thematic coverage. This put less pressure on the participants as there was no expectation for them to recount their life story in a comprehensive manner and made it easier for interviewees to avoid reliving traumatic experiences related to war and genocide.

The style of interviewing employed in all qualitative interviews was inspired by the "relational interviewing" approach developed by Lee Ann Fujii (2018) as it strengthens reflexive practice. Note that the meaning of relational here is different from the meaning we ascribe to it when talking about relational poverty or a relational approach to social differentiation: "relational interviewing is a method for generating data through interactions between researcher and interviewee. Its ethos is humanist. Its main ingredient is reflexivity. Its guiding principle is the ethical treatment of all participants" (Fujii, 2018, p. 1). Even though relational interviewing is based on an interpretivist ontology and epistemology, this does not prevent several of its key principles from being "explicitly incorporated into positivist-informed research" (Fujii, 2018, p. xvi) and by extension into critical realist research as a midpoint somewhere between the two. Fujii further makes the important point that romanticized notions of rapport are not helpful for qualitative fieldwork as it is not rapport in the sense of harmony or mutual liking that is required for a meaningful conversation but a *working relationship* that treats the research participant with dignity and respect. Finally, Fujii (2010) also outlines five types of meta-data in qualitative research that are an important and integral part of data collection and analysis: rumours, inventions, denials, evasions, and silences. These narrative strategies on the part of research participants are especially relevant in politically sensitive contexts like Laos and Rwanda. Revisits, local knowledge, and reflexivity are tools to assess and make sense of these meta-data (Fujii, 2010), which I employed in my own fieldwork in conjunction with the ethnographic methods outlined in 3.4.2. Of course, a large part of these meta-data may remain inaccessible to the researcher, and respondents' choices have to be respected. Therefore, much like Fujii (2010, p. 239), "when I encountered hesitation or resistance, I switched to entirely different topics to demonstrate my willingness to respect the informant's boundaries. 'Not asking' was one way I could demonstrate my trustworthiness".

If circumstances permitted, and similar to the quantitative strand, we chose interview locations that allowed some private space without seeming intrusive or unnecessarily raising rumours of secrecy, and that were familiar to the research participants, thereby conveniently reachable and providing some level of comfort or control. For most target households, this meant that we visited them at their home or on their land but let them propose the set-up (how we sit, on what, and whether indoors or outdoors). For actors interviewed in an official capacity, interviews took place in their offices or on their company premises. We tried to adjust the timing as much as we could to the availability of the research participants, although many also kindly adjusted their schedules to accommodate us. We often visited the households before the interview to introduce ourselves and to schedule an interview time. We also provided locally meaningful gifts to the target households (e.g. a hoe in Rwanda) and often went to distribute them separately after the interview. This gave us an opportunity to re-visit our interview partners, have informal follow-up conversations, or just spend some time together. Interviews with target households were conducted with wives and husbands when possible and with the household head in the case of single-headed households.

During interviews, I listened actively and regularly took brief notes but avoided extensive and distracting writing which was not necessary as most interviews were recorded with the permission of the research participants and later transcribed (in a few instances participants preferred not to be recorded, sometimes for fear of retribution by authorities or the companies they worked for, but nevertheless gave permission

for note-taking). However, recordings only document a limited, although crucial, excerpt of the researcher/participant interaction. Even in cases where there are no pre- or re-visits, there are informal exchanges before and after the interview. For example, we often asked interviewees to show us their fields and stayed back to talk more. This gave participants the opportunity to add anything that they preferred not to be recorded. In addition, it allowed us to return back to the level of everyday social interactions and, if possible, to end on a positive note (Yeo et al., 2014). In an attempt to capture interview aspects that evade the recording, I developed a template based on Spradley (1980) and Phillippi and Lauderdale (2018) to document the interview setting, the appearance and demeanour of the research participants, emerging themes and questions, etc. and also any notable exchanges before or after the recording (see appendix 5).

Most recorded interviews were transcribed by a transcription assistant at the University of Bern and by myself following detailed transcription guidelines that I developed to match our needs and based on the sources contained in appendix 6. Transcription – much like data cleaning, its conceptual equivalent in quantitative research – is an important part of the research process but often ignored in methodological discussions (Azevedo et al., 2017). The attached guidelines represent an effort to make this process as transparent as possible in line with a reflexive practice. Moreover, with these guidelines I intended to make the RA role visible by distinguishing statements made by the RAs themselves from statements translating the voice of the research participants (Edwards, 1998). Whereas all target household, life history, and certain key interviews were transcribed clean verbatim, most interviews with other actors were paraphrased according to the respective note-taking guidelines in appendix 6. For interviews assigned to the assistant, unclear or difficult passages were marked by him and double checked by myself as I was more familiar with the content and voices/accents.

After the clean verbatim transcription, all semi-structured target household interviews in Rwanda were analyzed for research paper IV with an adapted version of Schreier's (2012) qualitative content analysis (QCA). QCA "is a method for systematically describing the meaning of qualitative material" (Schreier, 2012, p. 1). It develops a coding frame that can be adapted to fit the interview data as well as the research questions and helps distil the selected aspects of meaning. QCA is suited to comparative research questions and often implicitly based on realist assumptions (Schreier, 2012). It is thus compatible with the research design and ontological and epistemological stance outlined above. We used both concept-driven and data-driven strategies to develop a coding frame which was then piloted on parts of the material and further refined. The final coding frame is presented in appendix 7 and was applied across all 30 semi-structured target household interviews in Rwanda. Transcription and analysis were done in English or French using MAXQDA 2018 and MAXQDA 2020. The "summary grid" function allowed us to compare the same theme across different interviews and to jump back to the transcript if needed. It also made it easy to read related codes in the same interview to get the bigger picture and to add comments when needed. Rather than producing summaries of the segments, we used this function to note key insights, hypotheses and relationships among codes which allowed us to construct our arguments.

3.4.2 Ethnographic Tools

The second category of qualitative research methods consisted of a combination of different ethnographic tools. First, I undertook an effort to live as locally as possible, staying typically with a host family in or near the visited village together with the RA. Host families were not target households and were usually identified together with village authorities. This immersion allowed a much better grasp of the daily lives at our research sites. It also strengthened relationships with the community and research participants as I could participate in local activities, engage in informal conversations and was more accessible. Second, my RA and I undertook exploratory walks to get to know the surroundings better, to take photos, and to

make observations. Through this, we discovered several new and important aspects that would otherwise have evaded us (e.g. local gathering places, such as markets, bars or temples, or local processing facilities, businesses, etc.). Third, on these explorations and on other opportunities, we benefitted from informal interactions with people from all walks of life. Especially enriching were "go-alongs" (Kusenbach, 2003) and other variations of walking interviews (Kinney, 2017) – where we were invited to accompany someone to a place (e.g. their fields), an event (e.g. a religious ceremony) or an activity (e.g. preparing seedlings) – and "hanging out" (Browne & McBride, 2015) – where we spent time with people in an informal setting, often at local gathering places. These activities could be planned or unplanned and involved people familiar or unfamiliar to us. They were not recorded but enabled fruitful informal conversations and (at times participant) observations. Fourth, through such opportunities, I could participate in social or work activities. As a result, I occupied different positions along the observation-participation continuum throughout the fieldwork. For the most part, I was an *observer-as-participant*, defined as someone "who identifies himself or herself as a researcher and interacts with the participants in the social process but makes no pretense of actually being a participant" (Rubin & Babbie, 2017, p. 460). At other times, and for certain activities, I took on the role of *participant-as-observer* where I participated fully with the group under study but also acknowledged my researcher role (Rubin & Babbie, 2017). Finally, as part of the reflexive practice adopted for this research, I wrote detailed, usually daily, field notes documenting countless observations, exchanges, thoughts, doubts, and questions along the research process (Maharaj, 2016; Phillippi & Lauderdale, 2018). This covered not only qualitative but also quantitative fieldwork, the planning process and research-related encounters and observations during all 8 months spent in Laos and Rwanda. The result is an extensive field journal of over 220,000 words which proved to be an invaluable resource to support the analysis and writing process: it provided detailed, contextual information which I would otherwise have forgotten and traced methodological decisions taken in the field.

3.4.3   *Participatory Rural Appraisal (PRA) Focus Group Discussions*

The third group of research methods comprised various types of focus group discussions based on participatory rural appraisal (PRA) tools. In Laos, we conducted focus group discussions in the four villages selected for the first round of qualitative fieldwork (see 3.4). In each of these four villages, we undertook three forms of focus group discussions based on the following PRA tools: a mobility mapping and wealth ranking (in the same session) with a group of men; a mobility mapping and wealth ranking (in the same session) with a group of women; and a village timeline with a group of elderly villagers of both genders. Local hierarchy demanded that the village leader or deputy identify participants based on the criteria we set out as a research team. For the selection of participants in the mobility mapping and wealth ranking, these criteria were: two groups of about five participants separated by gender, if possible each with a mix of ages, wealth levels, scale of agricultural production, and cooperative membership. The criteria for the selection of the timeline participants were: one group of about five elderly people of both genders who had lived in this village for a long time and were knowledgeable about its history. Unfortunately, it was challenging to get more than one woman per timeline group, even though we insisted upon it with the village leaders. It was unclear if this was because elder women were thought of to have less knowledge or to be less important, or because of something else.

The designs of the mobility mapping, wealth ranking, and timeline exercises were loosely based on the respective toolkits provided on the CD-ROM accompanying the World Bank sourcebook on Tools for Institutional, Political, and Social Analysis of Policy Reform (World Bank, 2007) and available on its companion website (World Bank, 2012). These tools are part of a family of participatory methodologies that emerged in the mid-1970s and has since evolved to encompass a continuum of RRA (rapid rural

appraisal), PRA (participatory rural appraisal) and PLA (participatory learning and action) tools (Chambers, 1994, 2015). The extent to which such methodologies can be truly participatory or empowering has rightfully been questioned as they are inevitably embedded in local power structures (Mosse, 1995; Richards, 1995). Nevertheless, they can enable insights into locally grounded meanings of poverty (as in the wealth ranking exercises) and provide a platform for a bottom-up construction of local histories based on tradition or lived experience (as in the timeline exercises).

The design of each exercise was the same in all four villages. We provided snacks and drinks for each group and started the meeting with informal exchanges and an introduction of ourselves as well as of all research participants. For the mobility mapping, the focus was on four different aspects of mobility that were written on colour-coded cards and placed on a flipchart in relation to the village: place of origin, places of work outside the village in the last three years, places visited in the last 12 months (including purpose and frequency), and origin of hired workers in the last 12 months (as well as often the number of people hired and ways of contacting them). For the wealth ranking, we suggested four categories (wealthy/rich, better-off, poor(er) and very poor/poorest) to ensure comparability across groups and asked each group how they would describe the characteristics or relations of people and households in these categories. Table 5 provides an example of the resulting outcomes. Crucially, we never asked about individual households and did not produce a wealth ranking of participant or village households as is often done in these exercises (see for example Scoones, 1995, and World Bank, 2012). I object to this form of research as it is ethically highly problematic. For the timeline, we simply drew a line across multiple flipcharts, which we glued together, and then noted key events stemming from the discussion in chronological order. At the end, we left the timeline flipcharts with the participants as it was "their story" – a gesture which was appreciated.

Table 5: An example of the wealth descriptions based on the wealth ranking exercise of a women's focus group discussion.

Wealthy/rich	Better-off	Poor/poorer	Very poor/poorest
Car	Car (maybe less)	A little farm	Not owning a house (renting)
Big house	House (maybe smaller)	No car	Work for others
More land for farming	Farm	Small house	No land for farming
Lots of money in the bank	Savings	No savings	Not enough to spend
No debts	Happy family	Sad	
Healthy		Work for others	
		Have debts	

While the mobility mapping was more structured and individual, the wealth ranking and timeline were open-ended group discussions where our role was to facilitate and to make sure that the key points were captured on the cards or the timeline. After an initially open discussion, we asked follow-up questions to ensure that points of interest in relation to the research themes were addressed as well (in the wealth rankings this included for example the characteristics of each wealth category in relation to work, migration, gender, or land; for the timelines this included the establishment of coffee production or the arrival of large-scale plantations in concession areas). We always recapped the results and asked if we captured everything as it was intended and made modifications where this was not the case. All group

discussions were recorded with the consent of the participants except for one timeline group discussion where participants preferred to discuss without being recorded. The recordings were not transcribed. Instead, we photographed all outcomes on the flipcharts and translated the wealth rankings and timelines into English. In addition, I took extensive notes of each meeting and compiled a 52-page internal project report detailing the procedure and findings of each group discussion. While the mobility mapping and wealth ranking provided useful evidence, e.g. on the nature of the hiring process or the association of casual wage employment with poverty, the timeline was the most revealing exercise and resulted in lively discussions about change and the impact of key events, e.g. the arrival of large-scale land concessions, on the villagers' livelihoods. These group discussions have informed the discussion in paper II.

PRA focus group discussions were only implemented in Laos. While they were useful in this context, I decided that it would be better to use my limited resources to increase the number of individual interviews in Rwanda as my analysis of the local context led me to believe that research participants were more at ease to speak their mind in a smaller setting given high levels of mistrust and social control and the impossibility of guaranteeing anonymity in a group setting. This also allowed me to revisit households multiple times and build more trust than is possible in group contexts. In addition, village timelines – the most rewarding tool in Laos – were judged to be too sensitive given the recent history of the genocide.

3.5   Research Ethics

The research for this dissertation, first and foremost fieldwork, has been ethically challenging. It is not just a reflexive practice that requires a thorough and transparent engagement with ethical questions (O'Reilly, 2012). In fact:

> *All those interested in field research, regardless of the topic, would benefit from engaging with the burgeoning literature on the methodological challenges of research in contexts affected by violence. Because research is not about violence does not mean that physical risks to researchers and research interviewees will not arise from the interaction between research and local political economies. (Cramer et al., 2016, p. 155)*

This point is only reinforced in our research setting where three additional challenges could be identified. First, Laos and Rwanda are politically sensitive contexts. This is particularly due to the history of civil conflict and the autocratic governance styles in both countries. Although my research did not touch upon the conflicts themselves, land and labour relations are intrinsically linked to historical and present-day power struggles. Nowhere are the political and ideological frictions more apparent than in the scholarly and journalistic writings on Rwanda. Indeed, it is "as if there were two Rwandas" (Hintjens, 2015, title): one under an oppressive dictatorship committing uncountable human rights abuses and where poverty has been increasing; and one under a developmental and visionary government that has overseen a miraculous recovery from genocide and decades of decreasing poverty. Hintjens (2015, p. 139) notes that "each camp is a problem, since each engages in rhetorical warfare, and denies the validity of the other camp's position, calling them murderers, responsible to boot for the ultimate crime, the genocide itself". As a result:

> *This makes it both difficult, and vital, for younger scholars working on identity-related issues or post-genocide transformations in Rwanda to choose subjects, methods and theories that allowed them to move beyond highly contested notions like ethnicity and nationalism. Since most critical senior Rwanda scholars are no longer allowed into the country, younger researchers working outside Rwanda – Rwandans as well as non-Rwandans – face some difficult choices. (Hintjens, 2015, p. 143)*

These choices are difficult indeed, and in fact the schisms in writings about Rwanda have only grown in the seven years following Hintjens's analysis. Emerging accusations about extra-territorial killings of dissidents (Wrong, 2021) or accusations of data fabrication (Okito, 2019) have even been picked up in mainstream outlets such as The Economist (2021a, 2021b) and the Financial Times (Wilson & Blood, 2019) and have often been greeted with vitriol and online trolling. The first step for young researchers is to become aware of these debates, their origins and development and to familiarize themselves with key contributions on all sides as long as they are relevant to the research question. The second is to critically assess them relative to one's own evidence and analysis. The outcome of this process is open. While this might lead one to come down on either side of the debate, I have tried to move beyond this impasse in a critical but constructive manner by reflecting my evidence in light of these discussions but without getting unnecessarily tangled up in them. The political sensitivity of research sites in Laos and Rwanda also required precautions (namely confidentiality) to safeguard the safety of research participants. As the identity of interviewees is often known to neighbours and acquaintances, it is all the more imperative that the content of the exchanges is protected and anonymized. In addition to these steps, I continuously gathered feedback from my RAs about the type of questions I asked and the reactions from participants and adapted the interview guides accordingly to ensure that critical questions were asked appropriately and did not endanger anyone.

A second challenge stems from the fact that violence and social disruptions have left a mark on many people, especially in Rwanda where a large share of the population suffers from trauma and mental health issues (see 1.2). In this context, interviewing carries a real risk of re-traumatization (Thomson, 2010) which violates the do-no-harm principle and for which I did not have the adequate training to respond. As a result, in both countries I made it clear from the start that I was not here to talk about the war or the genocide. Indeed, many participants simply talked about "after" or "before" the genocide. I kept my questions focused on the research questions and never asked about ethnicity in Rwanda as discussions of ethnic identifiers has been banned (Huggins, 2017). When participants volunteered their own memories from the wars, I listened actively and showed compassion but did not probe much further, instead steering the conversation gently back to the main themes. The lack of in-depth engagement and follow-up may have seemed callous at times, but I perceived it as my moral obligation to do this in order to ensure the safety, emotionally and politically, of everyone involved.

The third ethical challenge that I faced in my fieldwork was that there was often a major power imbalance between myself and research participants – often tied to race, class, and gender dynamics. We interviewed many people living in material destitution, some politically and socially marginalized, some suffering from hunger. Interviewing people in vulnerable situations may raise expectations of support beyond what the researcher can deliver and requires a careful probing of informed consent and clear explanations of what participation entails, although this cannot always dispel expectations of interviewees (Fujii, 2012). Ensuring informed consent is a continuous process and requires researchers to convey its meaning in a language that participants are familiar with (Fujii, 2018). I devoted substantial time explaining the research objectives, demonstrating the voice recorder to people who may be unfamiliar with it (see Thomson, 2010) and allowing space for participants to ask me any questions. Repeated calls for help and my inability to address them in an adequate manner were, however, crushing. I made every effort to empathetically listen to the concerns and to be as supportive as possible but also felt the constant need to reiterate what we were here to do in order to not make any false promises. In cases where participants clearly felt at unease or seemed not to be in a state to participate in an interview, we abandoned the undertaking and had a brief informal exchange instead.

Based on this reflexive engagement with ethical challenges before, during and after fieldwork, I wrote a research ethics and safety handout, contained in appendix 8, which outlines practical tips and dilemmas based on key contributions in the literature. I then devised measures for my own research practice through which I tried to address these challenges in both qualitative and quantitative research. In addition, keeping a field journal provided me the space to document and reflect upon the concrete manifestations of these dilemmas in my fieldwork.

4 Key Insights of Research Papers

Having established their conceptual and methodological underpinnings, this chapter summarizes the key insights of each of the four research papers that make up this dissertation and are contained in part II (see also the overview provided in table 1). A comprehensive list of references and secondary data sources can be found directly in the respective papers.

4.1 Research Paper I: The political economy of pro-poor growth in Laos and Rwanda compared

This paper develops an integrated framework to conceptualize pro-poor growth trajectories in developing economies and then empirically applies this framework to a comparative study of Laos and Rwanda. It is the first article to provide a comparative political economy analysis of these two countries and also marks the first time that the political settlements approach is employed to examine the distribution of power in Laos.

Our framework aims to understand the political conditions and key mechanisms linking growth and poverty in order to account for pro-poor economic development. This is achieved through the integration of two strands of heterodox political economy literature related to pro-poor development strategies (PPDS) and political settlements (PS) analysis respectively. The paper starts by presenting each approach along with its strengths and weaknesses before outlining a pathway for their constructive integration. The PPDS approach as set out by Saad-Filho (2007, 2016) builds on heterodox economics and a critique of the trickle-down effects of growth to develop an analysis that is ambitious in terms of social justice and prioritizes poverty reduction over growth maximization. It understands growth not in the abstract but as historically and spatially situated in specific relations of production, reproduction, and exchange. This has two important implications: first, a PPDS recognizes the role of productivity growth in generating the necessary resources to increase material well-being, as well as the role of public sector intervention (notably industrial policy) in driving structural change. Second, a PPDS acknowledges that growth may both eliminate and create poverty and thereby adopts a relational view of poverty. What matters from this viewpoint are the terms of inclusion of poor households into the growth process (Oya et al., 2013) and the distributional implications stemming from this. Drawing on Osmani's work (2004), we highlight the employment nexus and social policy as two key mechanisms shaping the link between growth and poverty from a PPDS perspective.

Yet, while the PPDS approach provides useful analytical tools to study growth-poverty trajectories in developing countries, it fails to systematically account for the political conditions underlying these trajectories. We argue therefore that it needs to be complemented by a historically-grounded analysis of power and politics. The political settlements (PS) approach as set out by Khan (2010, 2018) is especially fruitful as it shows how the compatibility between the distribution of power (notably the structure of the ruling coalition and the power of emerging capitalists) and the institutional structure strongly influences institutional effectiveness. In particular, it can account for the extent to which growth-enhancing governance capabilities can overcome structural challenges in developing economies (notably the political instability of patron–client networks, weak property rights and the prevalence of non-market transfers, and the productivity gap). The PS approach, however, is rather elite-centred (see Selwyn, 2016a), fails to systematically explore growth-poverty linkages and does not typically adopt a relational view of poverty. We argue therefore that it needs to be integrated with the PPDS perspective in order to credibly account for pro-poor economic development. Figure 6 presents our new and integrated framework. In a

nutshell: the prevailing political settlement shapes the existence and effectiveness of governance capabilities that have been historically necessary to achieve political and property rights stability and productivity growth. This process of economic development confers certain costs and benefits to different groups in society and may reinforce or alleviate poverty through changes in purchasing power and the provision of basic services. Crucially, these outcomes may engender feedback mechanisms by reinforcing social movements or altering patron–client alliances which will restructure the political settlement.
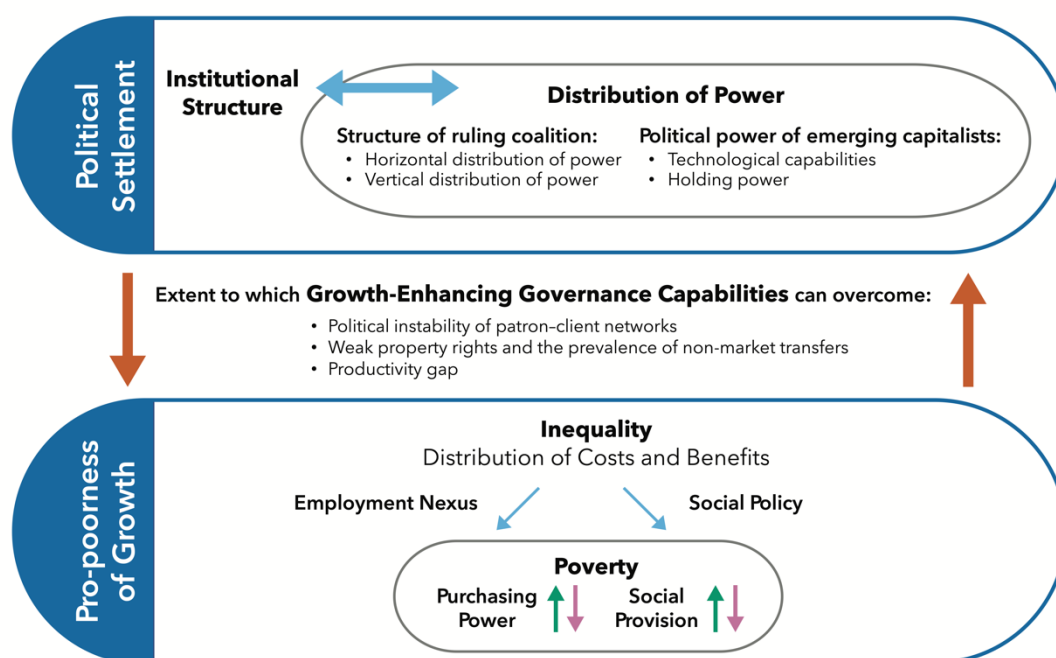
Figure 6 (reproduced from research paper I): An integrated framework to conceptualize pro-poor growth trajectories in developing economies. Elaborated and adapted from Khan (2008, 2010) and sources cited in research paper I.

The empirical contribution of this paper is to test this framework by applying it to the recent growth trajectories of Laos and Rwanda and to examine to what extent they have implemented pro-poor development strategies and how they have done so. It starts by characterizing the political settlements and investigating the governance capabilities and nature of economic growth in both countries. We find that both political settlements are strongly centralized and legitimize themselves partially through developmentalist aspirations anchored in discourses around socialism in Laos (Tappe, 2017) and around national unity and reconciliation in Rwanda (Reyntjens, 2016). Both have successfully maintained political stability, although at a high cost in terms of civil liberties and political rights (Freedom House, 2022). Our analysis also reveals that the restructuring of property rights and use of non-market transfers have reinforced commodification pressures and social differentiation in both countries. To some extent this has allocated resources to productive capitalists, but the challenges of technological catch-up and productivity growth have only been partially overcome. In Laos, growth has been predominantly driven by capital-intensive industries and the exploitation of natural resources through hydropower and mining (Asian Development Bank, 2017), whereas it has been based on high-end services such as tourism, finance, and real estate in Rwanda (Behuria & Goodfellow, 2019). Productivity growth in manufacturing and agriculture has generally been disappointing in both countries (World Bank, 2017b, 2020a). This is worrisome given, on the one hand, the historical association of manufacturing with economic

development (Haraguchi et al., 2017) and, on the other hand, the importance of agriculture for poverty reduction, notably through the provision of employment and affordable food (Irz et al., 2001).

Paper I then assesses the extent to which these growth trajectories have been pro-poor by first exploring the two key mechanisms introduced in the conceptual framework above: the employment nexus and social policy. We argue that the growth sectors in Laos and Rwanda have not created adequate linkages with the rest of the economy. Most wage employment opportunities remain scarce and precarious (Bird et al., 2022; World Bank, 2020b), as also evidenced in research papers II and IV. Moreover, increased land pressures and social differentiation have amplified vulnerability and sometimes exacerbated poverty, particularly on the Bolaven Plateau (see Nanhthavong et al., 2020). Nevertheless, there are positive signs regarding social policy. Rwanda (see for example Ezeanya-Esiobu, 2017), and to a lesser extent Laos (see for example ILO, 2017), has invested massively in the provision of social services, especially in health and education, that reach many of those in need. Lastly, we inspect the direct outcomes of these processes on material well-being by tracing changes in poverty and inequality using various quantitative databases and qualitative studies referenced in the paper. We find, first, that multidimensional poverty has undoubtedly decreased in both countries, not least thanks to these investments in social provision. Second, in monetary terms, wealthier households in Laos have benefitted more in both relative and absolute terms than poorer households. As a result, income inequality has risen. Third, there are severe doubts about government data in Rwanda that show a strongly pro-poor trajectory in relative terms and declining – although still very high – levels of inequality. Instead, there are several signs at the micro and macro level that poverty reduction has not only slowed down recently but that poverty may even have been increasing (see for example Okito, 2019). We conclude that while there have been absolute gains for the poor, the recent growth experiences of Laos and Rwanda cannot be called pro-poor from a PPDS perspective. Given the relative failure in creating sufficient decent and productive employment, the protection of the assets of the poor, first and foremost land, deserves particular attention. Finally, our study shows that only by examining the political conditions, historical specificity and socio-economic mechanisms underlying recent growth-poverty trajectories can we account for the contradictory effects of economic development in Laos and Rwanda.

4.2 Research Paper II: Measuring non-monetary poverty in the coffee heartlands of Laos and Rwanda: comparing MPI and EDI frameworks

Moving from a macro analysis of recent growth trajectories to the direct measurement of poverty, research paper II provides a comparative analysis of the poverty profiles of the Bolaven Plateau and Nyamasheke. For each sample, we calculate locally adapted versions of the Multidimensional Poverty Index (MPI) and the Extreme Deprivation Index (EDI). This allows us to offer a thorough conceptual, methodological, and empirical comparison of both measurement frameworks.

The MPI framework emerged in the last decade (see Alkire & Santos, 2014) and has been widely used across the Global South (and lately also the Global North, see Suppa, 2018). It derives from the capability approach and aims to give a nuanced picture of acute poverty. MPIs provide an aggregate measure of non-monetary poverty. Most consist of several equally weighted dimensions which in turn comprise weighted indicators that measure household achievement. For each indicator, a cut-off point is defined to identify household members as deprived or non-deprived on that indicator. Household members are typically considered multidimensionally poor if they are deprived in at least a third of the indicators. As a result of this design, MPIs have high data requirements, are relatively complex to construct, and involve somewhat arbitrary weighting decisions.

The EDI framework is even more recent (see Sender et al., 2018), and our paper is the first to replicate the index and test its usefulness. It derives from expectations about the division of consumption between necessities and more luxurious goods ("Engel's law") and aims to identify people with extremely low living standards. EDIs are unidimensional indices of basic non-food consumer goods that can make a meaningful difference in the life of poor people (e.g. a cooking pot or mobile phone). Based on local consumption patterns, several basic necessities are identified. Households that do not own a minimum number of these basic goods are classified as deprived. EDIs are therefore much simpler in design than MPIs and require less data but in turn provide a less comprehensive picture of poverty. Table 6 offers a systematic comparison of the two frameworks.

Table 6 (reproduced from research paper II): Comparison of MPI and EDI frameworks.

MPI framework	EDI framework
Non-monetary poverty: multidimensional deprivation	Non-monetary poverty: private consumption goods only
Claims to measure acute poverty directly by a shortfall in basic needs/functionings	Claims to be a good proxy for extremely low standards of living, including deprivations in education, nutrition, and limited access to decent jobs
Binary indicator can be calculated at the household level, cannot reflect intra-household inequality	Binary indicator can be calculated at the household level, cannot reflect intra-household inequality
Cut-offs changeable (deprivation and poverty cut-offs respectively)	Cut-off changeable (one cut-off only)
Decomposable into indicators and aggregated at population level	Can neither be decomposed nor aggregated
Each dimension has equal weight, but indicator weights vary	Consumer goods have equal weights within a country
High data requirements that necessitate complex survey design and index construction	Low data requirements for which simple survey design and index construction are sufficient
Some data are hard to verify by enumerators	Data easily verifiable by enumerators
Can be context-specific but does not need to be	Must be context-specific
Mixes stock and flow variables	Stock variables only

Thanks to their flexibility in design, both frameworks could be adapted to the available data as well as to the respective contexts in Laos and Rwanda. For example, given the much higher poverty levels in Rwanda, we had to adjust the deprivation cut-offs of some MPI indicators. As expected, EDIs could be calculated for almost all households, whereas the higher data requirements of the MPI framework led to a sample size reduction for the MPIs.

For each index and country, the paper compares deprived with non-deprived households on a large number of variables that are commonly identified in the literature as key markers of poverty. Our results clearly show that poor households in Laos and Rwanda have lower levels of education and literacy, although the Rwanda EDI registers more differences than the Rwanda MPI. This is informative as the level of education is an uncontroversial marker of poverty (Cramer et al., 2020). Likewise, poor households are worse off on nutrition indicators, but here EDIs and MPIs perform equally well. What stands out is the

extremely dire food situation in Nyamasheke, where 97% of female household heads of reproductive age do not meet minimum dietary diversity, and which has also been documented in our qualitative data. Similarly, both indices show that sanitary conditions are a strong marker of differentiation in both countries. The results are more ambiguous regarding household composition. Neither index picks up significant differences in average household size; however, this is not surprising as the relationship between household size and poverty has been contested (White, 2002). What may be more important, given the obstacles women face in labour markets, is the availability of adult male labour power in the households (Sender et al., 2018), which is confirmed by both EDIs and MPIs in Rwanda. Probably the most incontrovertible fact about the link between household composition and poverty is that ethnic minorities tend to be considerably poorer in Laos than the majority group of Lao-Tai (World Bank, 2017a). The same is shown by both our indices in Laos, validating once more the two frameworks.

In line with this dissertation, paper II argues that it is not simply the household attributes or characteristics themselves that matter for a relational understanding of poverty but especially the household members' embeddedness in production and labour relations. In this regard, our data reveal two structural differences between the Bolaven Plateau and Nyamasheke that may partially explain the higher poverty levels in Nyamasheke. First, despite the disruptions caused by large-scale land acquisitions on the Plateau, mean operational land holdings are 2.84 ha as opposed to 0.29 ha in Nyamasheke. Second, while the concession companies in Laos may not provide enough high-quality employment for local people, it is arguably still more than what many people in Nyamasheke have access to. Similarly, people in southern Laos benefit from the availability of wage employment in neighbouring Thailand (Manivong et al., 2014; Phouxay, 2017), whereas the African Great Lakes region does not provide the same opportunities. While coffee production on the Plateau is likely to be a retaining factor and out-migration may not be as high as in the southern lowlands, the MPI nevertheless finds that the percentage of households with migration jobs is around 29 among non-poor households but only around 9 among MPI-poor households. What both research sites have in common is that poorer households have less access to agricultural land.

Importantly, our paper demonstrates the significance of rural labour markets in the life of the poorest. At least 86% of EDI- and MPI-poor households that hire out labour in Laos and Rwanda have at minimum one household member engaging in casual agricultural wage employment. The respective share for non-poor households is at most 60% (in Rwanda) and as low as 39% (in Laos). In contrast, we show that non-poor households have significantly more access to relatively stable jobs with written contracts or monthly pay. Most of the poorest depend on combining relatively marginal own-account farming with precarious agricultural wage employment, whereas wealthier households invest in production through labour hiring or land acquisition, as far as this is possible, or through education in the hopes of gaining access to more stable employment opportunities in the non-agricultural sector. These findings corroborate our analysis of the employment nexus in research papers I and IV and show that the links between agricultural growth and poverty reduction are complex and that trickle-down effects do not occur automatically. Instead, in addition to safeguarding land access for poor households, there is a need for more demand-side policies to improve working conditions and increase the number of paid working days.

Finally, the paper shows that MPI and EDI frameworks have different purposes and advantages. In each country, the overlap between the two indices is limited, i.e. only 36% of the MPI-poor are also EDI-poor in Laos (it is 68% in Rwanda). Detailed analysis revealed that the EDI in Laos also counted some better-off households as poor, whereas the MPI was more biased in Rwanda. The EDI framework may therefore be more appropriate to differentiate households in poor rural settings where basic necessities are not owned by everyone. Nevertheless, the above analysis showed that both EDIs and MPIs yield similar results on key

markers of poverty in settings as diverse as Laos and Rwanda. Regression and classification analysis reflects these findings and confirms the impression that the EDI framework performs best in Rwanda and the MPI framework best in Laos. We conclude that the EDI provides a practical and reliable method to identify households with very low standards of living in high deprivation contexts. Therefore, depending on the context, programme needs, and resources, MPIs and EDIs can be useful tools for the targeting of beneficiaries and programme or policy evaluation.

4.3   Research Paper III: From theory to the field and back again: fieldwork-based research on social differentiation in agrarian studies

Motivated by my own experience conducting fieldwork on social differentiation in rural settings and the lack of methodological guidance in the literature, research paper III is the first study to systematically review the literature in agrarian studies with the aim of discerning how research on social differentiation has been conceptualized and then operationalized in fieldwork (a comprehensive list of reviewed articles is available in the annex to paper III).

Our review finds two broad approaches to the study of social differentiation. The stratification approach identifies social strata based on distinguishable household attributes or socio-economic characteristics (e.g. Scoones et al., 2018). Its focus is on inter-group inequality and distributional outcomes. It is empirically- rather than theory-driven. All households in a sample are evaluated according to some criterion or multiple criteria that are typically measured through observable and countable household characteristics such as asset or land ownership. Next, these households are assigned to a specific stratum based on a pre-defined threshold, on statistical analysis (e.g. principal component analysis) or on self-identification or identification by others in participatory methods. The stratification approach is widely used across different theoretical traditions including the livelihoods framework and Marxist political economy.

In contrast, a relational approach is more open-ended and stresses the nature of relations between households or individuals and also between them and other actors such as companies (e.g. Pattenden, 2016). It is not primarily concerned with an exhaustive analysis of the distribution of households in different strata but instead interested in the social interactions and relations through which these strata emerge. Its focus is on power imbalances and exploitation. These may not be visible at first but are revealed in indirect manifestations of conflict and resistance, for example. The chosen theoretical framework postulates the emergence of certain strata and informs what type of relations will be observed during fieldwork. The relational approach is thus more theory-driven. It is less frequently applied but also befitting several theoretical traditions including feminist approaches and, again, Marxist political economy.

Crucially, stratification and relational approaches are not incompatible. Both approaches are ultimately interested in mapping socio-economic change in agrarian formations. Their boundaries are frequently fuzzy as researchers tend to eclectically combine elements of each, and data collection methods overlap. In fact, it is often useful to start with the stratification of a sample in different groups and then to examine the dynamic drivers, functions, and power relations underlying the relations between these groups. That is exactly what we have done in paper IV.

Our review shows that there is a set of common dimensions of analysis that is often used to operationalize social differentiation across both stratification and relational approaches: measures of material welfare, labour dynamics, and class. *Measures of material welfare*, e.g. income or asset ownership, are the most frequently used dimension and typically applied to stratification exercises. Many of these measures are

easily quantifiable and enable the researcher to establish a household's socio-economic position. Nevertheless, there are questions about their design (e.g. the selection of cut-off points or weights) and a risk that these measures conflate households that may be rather different in terms of labour use or scales of production, for example. Most of all, they can hardly explain the circumstances that lead to the particular distributional outcome that is observed. The study of *work arrangements and labour relations* provides another interesting avenue to operationalize social differentiation. This can be done quantitatively, e.g. through Patnaik's (1987) labour exploitation index which we use in paper IV, or qualitatively by tracing drivers and mechanisms of exploitation, which we also do in paper IV. Finally, social differentiation is sometimes used as a starting point to study *class formation* and long-term agrarian change. In many rural settings like Nyamasheke, the challenge is to capture class dynamics where there is no clear polarization in classes of capital and labour and where petty commodity production dominates. Here again, quantitative or qualitative approaches can be deployed to identify theoretically derived class categories or to postulate new ones. Across all the three dimensions of material welfare, labour, and class, there is a common understanding that social differentiation extends beyond the sphere of production and is shaped by other social categories such as caste, ethnicity, or gender.

While there have been promising conceptual advances and many fine-grained empirical articles on social differentiation in agrarian studies, we find that there is a lack of methodological discussion about the way research is operationalized to link these concepts to empirical manifestations on the ground. Nevertheless, by mapping the field practices of the authors of the reviewed papers, we can trace the methodological choices these researchers made in data collection and analysis. Our paper shows, first, that a wide range of predominantly social science methods, at different levels of analysis, are used for data collection. These include, among others, household and farm surveys, qualitative interviews, life histories, focus group discussions, community mapping exercises, participant observation, and archival research. Second, these methods are not typically used in isolation but eclectically combined according to the researcher's disciplinary background, her or his research questions, and the resources available. The integration of different methods in mixed methods research designs is, however, rarely explicitly addressed. Third, there is a preference for the combination of small or medium household surveys with qualitative interviews. Fourth, most studies are interested in tracing changes over time but often lack the resources for repeat surveys and long-term fieldwork. Instead, researchers use other means to reveal processes and dynamics across time, for example, by incorporating questions about the past; by conducting oral or life histories; by undertaking archival or historical research to link micro studies to processes of change at the meso- or macro-levels; or by doing comparative studies. Fifth, many researchers adapt methods and questions so that they are relevant to the context and able to grasp local manifestations of the drivers and characteristics of social differentiation. The challenge is to find a way of doing this that is analytically rigorous, captures the concepts of interest, and responds to the theoretical framework. The balancing act between local adaptation and analytical requirements is especially demanding for comparative research that requires a certain degree of standardization. Sixth, in line with the wide array of data collection methods, different analysis methods have been used; however, they are rarely made explicit. Instead, the authors in the review focus on their use of theoretical concepts to interpret the data and answer their research questions. Several effectively construct typologies to reveal patterns and present analysis while taking care to draw attention to underlying tensions and dynamics that may be concealed by a static snapshot.

Given the limitations of rigid classifications and the tendency of the stratification approach to treat the measurement of social differentiation as an end in itself, we argue for a "relational turn" in the study of social differentiation to examine the processes underlying the emergence of socially differentiated groups.

This would move away from mechanistic readings towards an understanding of social differentiation as a historically contingent social process. In short, it would incorporate into analysis the fact that socio-economic groups are not pre-determined and do not exist in a vacuum. We therefore conclude by deriving methodological implications from such a "relational turn" for fieldwork in agrarian social differentiation. These are, first, that we should not abandon household surveys and the study of household characteristics but instead that we should use these procedures as a stepping stone in the analysis rather than an end in itself. Second, researchers should explicitly enquire about the socio-economic relations in which household members participate: i.e. they should ask about the nature of these relations, why people engage in them, how they are experienced, what conflicts emerge and how they are resolved, etc. Third, we recommend triangulation to get a fuller picture of how these relations operate. This also means that it is worthwhile to interview parties at different ends of these relationships, e.g. not only employees but also employers. Finally, we propose that the gathered evidence be integrated in wider debates about social differentiation and agrarian change by, for example, tracing how these relations maintain or challenge ongoing processes. We are confident that a more explicit methodological discussion about the operationalization of theory for fieldwork and the linking back of empirical evidence to theoretical debates will advance the field of agrarian studies.

4.4 Research Paper IV: Agrarian class relations in Rwanda: a labour-centred perspective

Paper IV builds on the conceptual and methodological contribution of paper III and applies the relational analysis that has been laid out therein. It zooms in on the micro level and provides a nuanced empirical case study of class and labour relations in Nyamasheke by drawing on primary data from mixed methods fieldwork. The paper starts by describing the nature of land relations and coffee production in Nyamasheke. Rwanda's hilly terrain, high population density, and increased commodification have heightened pressures over land (see Pritchard, 2013). Our survey finds mean operational landholdings of 0.29 ha per cultivating household, significantly below the national average of 0.59 ha, which is not surprising given that Nyamasheke remains the poorest district of the country. Coffee is Nyamasheke's main cash crop and dominates the local economy. It is mostly grown by smallholders although not the poorest of the poor as they lack the required capital investment and need whatever marginal land they have for subsistence production. Crucially though, many of the poorest depend on wage employment from coffee farms or washing stations that process the coffee cherries. This hints at the necessity of a labour-centred perspective.

Class analysis in rural areas has often been based on the stratification of households according to land ownership. Our paper argues that such a stratification approach overlooks relations between households and is inappropriate in a context like Nyamasheke that is characterized by widespread land scarcity. Instead, we propose a labour-centred analysis of class *relations* (see also Campling et al., 2016). This enables us to take account of the occupational multiplicity of rural households that combine different forms of work in complex livelihood portfolios. It also provides an entry point into the often disguised and unequal power relations between households.

Our analysis proceeds in two steps in line with the analysis provided in paper III. First, we take a stratification approach to group households into five classes, however, not based on land ownership but according to the type of work performed or hired in (following an adaptation of Patnaik's labour exploitation index, see Patnaik, 1987). We find that most households (47%) are "workers" and primarily depend on work done for others. This is striking for a setting where the rural population is typically

thought to consist of self-employed smallholders. Quite to the contrary, these so-called smallholders, or more precisely "petty commodity producers" who work mostly on their own farms, make up only 42% of households. It is important to note that most of them also participate to some extent in labour or output markets, making subsistence farming in the strict sense a true exception. About 5% of households are "professionals" with high-skilled non-agricultural employment and another 5% are "retailers and traders". "Capitalist farmers" that depend on labour hiring more than on self-employment are the smallest class (around 1%, although this excludes corporate estates and washing stations which could not be included in the household survey but were captured through qualitative methods). This indicates that, given widespread land scarcity, there may be limits to capital accumulation in local agriculture.

While this quantitative approximation of the class structure in Nyamasheke is more useful than one simply based on land ownership, it remains static and fails to observe the multidimensional and dynamic nature of class relations. In the second step of our analysis, we therefore investigate the drivers, functions, and power *relations* embedded in different work arrangements. Combining our survey results with a wealth of qualitative data, the paper investigates four key mechanisms of labour mobilization in rural Nyamasheke: wage labour, *kuguzanya* (labour exchange), *nyiragabana* (sharecropping) and *kuragiza* (cattle-sharing).

We find active rural labour markets, although they remain mostly agricultural, localized, casual, and gendered in nature. Many women, especially widowed, divorced, and separated women, face the triple burden of production, reproduction, and discrimination in the labour market including lower average wages and barriers to access better employment opportunities. Our results also reveal strong seasonality and diverse forms of payment: production cycles determine labour demand, which is usually highest around the coffee harvest from late March to July, and food-insecure households often depend on in-kind payments while employers may also lack cash to pay workers. Importantly though, limited monetization reflects a lack of liquidity and not the absence of commodification as most households are not able to reproduce themselves outside of market relations. Finally, we document struggles over the terms of work (e.g. the length of the working day or the intensity of work), which are met with a range of disciplining measures on part of the employers (e.g. close monitoring or payment deduction) and some forms of silent resistance on part of the employees (e.g. hiding away).

In contrast to wage employment, *kuguzanya* is a traditional form of labour exchange involving no payments. It offers poor households an easy way to mobilize labour and strengthens communal ties. It is usually reciprocal in nature and not indicative of exploitative class relations between the participating households.

Around 11% of respondents engage in *nyiragabana*, a form of sharecropping whereby sharecroppers work the landlords' land and split the produce 50:50. Sharecroppers are usually required to contribute all the inputs, and landlords only contribute to harvesting in order to guarantee their share. Here, there is a clear power imbalance at play: sharecroppers have little negotiation power to demand more favourable terms but often feel compelled to engage in *nyiragabana* because they lack enough land and employment. For landlords, sharecropping is an attractive alternative to labour hiring as no regular payments are needed and the dependency of sharecroppers on their harvest share acts as a powerful disciplining mechanism. *Nyiragabana* therefore leverages class differences between relatively land-rich and land-poor but labour abundant households. The poorest households may be excluded altogether as they often lack the necessary inputs and labour power to engage in sharecropping. Importantly, *nyiragabana* is practised for subsistence crops such as cassava or sweet potatoes, and 70% of tenant households complement it with wage employment. Like own-account farming, *nyiragabana* has a longer time horizon and provides a minimum of subsistence that enables households to engage in labour markets to satisfy their needs for cash and

traded goods and services. Unlike most forms of sharecropping, *nyiragabana* was only introduced recently; land rentals paid in cash were the norm before the early 2000s. The reasons for this shift remain unclear but it could be that *nyiragabana* makes it is easier for landlords to expand production and ensure payment in a context of limited monetization and increasing land scarcity.

Kuragiza is a cattle-sharing agreement and somewhat similar to *nyiragabana*. "Receivers" of an animal must take care of it and provide shelter and fodder, but the proceeds from sale (minus initial and veterinary costs) are split 50:50. Like in *nyiragabana*, there are power imbalances between the owners of the means of production and those who provide the labour power. In addition, once again, the poorest face barriers to entry. *Kuragiza* is, however, seen as less exploitative than *nyiragabana* as it not only provides manure and milk to "receivers" but the possibility to own their own cattle in the future as any offspring are allocated to the "giver" and "receiver" in turns. For "givers", *kuragiza* is an interest-yielding financial investment that requires no monitoring.

Our empirical investigation shows that different mechanisms of labour mobilization fulfil different functions and operate according to different time horizons (table 7). Embedding this in a class-relational framework, we argue that temporal pressures become another arena of class struggle. Subject to their integration in the relations of production, households encounter different temporal scales. Some may be imposed by agricultural cycles or external markets, but others can be leveraged by owners of means of production to increase surplus extraction as their longer time horizons enable them to impose terms on workers who cannot afford to wait. Importantly though, workers also leverage time by combining activities with varying time horizons to ensure their survival. We further argue that the resulting livelihood patchworks are indicative of the commodification of subsistence as households cannot adequately reproduce themselves outside of market relations.

Table 7 (reproduced from research paper IV): Work relations according to needs and time horizon.

		Time horizon	
		Short term: **ABSOLUTE SURPLUS EXTRACTION**	**Long term:** **INTERNALIZATION OF RISK**
Commodity relations	**Production of USE VALUE**	Work paid in kind	*Nyiragabana*
	Production of EXCHANGE VALUE	Work paid in cash	*Kuragiza*

The paper underlines the need for a class-relational approach and shows how this can be operationalized with in-depth mixed methods fieldwork. Depictions of an undifferentiated and homogenous peasantry remain a myth. Instead, we demonstrate how even in a generally land-poor context with no sharp polarization, class relations of micro-capitalism shape local trajectories of accumulation and exploitation. Unfortunately though, while connected to global circuits of capital and enabling high levels of coffee exports at the aggregate level, recent economic growth has not translated into stable wage or self-employment and most of our respondents continue to "churn at the bottom" and to depend on the precarious combination of marginal farming and insecure wage employment. This suggests an important role for policies to tighten rural labour markets (see 5.1.4).

5 Synthesis

5.1 Key Contributions and Avenues for Future Research

Drawing from all four research papers, this chapter synthesizes the key contributions of this PhD at the conceptual, empirical, and methodological levels and identifies avenues for future research as well as policy implications.

5.1.1 Conceptual Level

This dissertation makes two main conceptual contributions:

- **Providing a new integrated framework to conceptualize pro-poor growth trajectories in developing economies (paper I):** The study of the political processes and economic transformations underlying contemporary growth trajectories in the Global South too often takes a top-down approach that assumes strong trickle-down effects and either ignores the role of labour or conceives of it narrowly as a factor of production (see also the critique in Selwyn, 2016a). By integrating the political settlements (PS) with a pro-poor development strategy (PPDS) approach, this dissertation offers a relational framework (shown in figure 6) that problematizes the linkages between growth and poverty, notably employment, and interrogates the implications of changing political conditions in order to account for pro-poor economic development. It therefore provides a theoretically grounded and policy-relevant advance on what are too often ideologically tinged debates. Further research should expand this political economy framework to take account of environmental (justice) concerns and political ecology with a vision to enable sustainable transformations within our planetary boundaries.

- **Developing a relational, labour-centred approach to class analysis (papers III and IV):** This PhD shows that a stratification approach, grouping individuals or households according to certain observable characteristics, while valuable in and of itself (e.g. to identify poorer segments of the population), should be complemented by an analysis of the various relations individuals and households engage in that give rise to their class location. Paper III outlines conceptually and methodologically what such a relational shift entails, and paper IV provides an empirical application through an in-depth case study of class relations in Nyamasheke.

5.1.2 Empirical Level

Through extensive comparative mixed methods research, this dissertation makes the following notable empirical contributions:

- It provides **the first in-depth comparative analysis of the growth trajectories of Laos and Rwanda** (paper I). This is somewhat surprising given their high and sustained levels of GDP per capita growth over the last two decades, landlocked status, and post-conflict reconstruction under authoritarian regimes. Moreover, this is also the first peer-reviewed paper to use political settlements analysis to study the distribution of power in Laos. Future research should examine the nature of state–business relations in Laos, specifically the technological capabilities and holding power of emerging capitalists, to better understand institutional effectiveness.

- It **assesses the pro-poor character** of both trajectories within the same conceptual framework, taking into account both monetary and non-monetary poverty and inequality (paper I). This research reveals severe limitations of the "growth miracles" in Laos and Rwanda, grounded in

empirical data: while multidimensional poverty has undoubtedly declined in both countries and their growth trajectories have been pro-poor in the weak-absolute sense, neither experience can be characterized as pro-poor from the perspective of the pro-poor development strategy (PPDS) approach adopted here. Future research should particularly investigate policy proposals to counteract the economic shocks and adverse social impacts of the recent COVID-19 pandemic.

- This dissertation provides **new primary data** for Laos (paper II), notoriously one of the least studied countries in Southeast Asia (Bouté & Pholsena, 2017), as well as for the poorest district in Rwanda (papers II and IV).

- It provides qualitative and quantitative **evidence on the under-researched role of rural wage employment** (papers II and IV). My research finds active rural labour markets in both countries but with different characteristics: more localized, sometimes paid in kind, and intertwined with sharecropping and cattle-sharing in Nyamasheke; more spread-out on the Bolaven Plateau where sharecropping is relatively rare and large-scale plantations have wide-reaching migratory impacts. Gendered divisions of labour within households and in the labour market remain strong in both places, although there has been some change as more women are entering paid employment. There remains a lack of research on domestic migration in Laos, especially on the role and gender dynamics of seasonal migrants that come to work on large-scale plantations.

- Using the MPI and the EDI frameworks, this research **identifies key markers of poverty** in rural Laos and Rwanda: low levels of secondary education, especially for women, and literacy; rudimentary sanitation conditions; a relative lack of access to land and high dependence on casual agricultural wage employment; minority status in Laos; and low meat consumption as well as a predominance of female household members in Rwanda (paper III). The food and nutrition situation in both field sites was worse than expected and especially alarming in Nyamasheke where 97% of female household heads of reproductive age do not meet minimum dietary diversity. Future research should link anthropometric data to the analysis of labour relations and social integration or stigma of undernourished households.

- This is one of very few studies to **describe the drivers and dynamics of sharecropping** in Rwanda, which is surprising given that nationally about 15% of households sharecrop (NISR, 2018). It would be interesting for future research to explore variations in this practice in other regions of Rwanda and to test the hypotheses that are put forward in paper IV regarding the reasons for its recent emergence.

5.1.3 Methodological Level

This dissertation puts great emphasis on transparent methodological discussions as they provide the key to implementing a progressive political economy research agenda that recognizes patterns and lived experiences on the ground and interlinks them with theoretical developments so that the latter can be refined and their explanatory potential improved. As part of this endeavour, this PhD makes three main methodological contributions:

- **Operationalizing research on pro-poor growth trajectories (paper I):** Paper I not only presents a new integrated framework to account for pro-poor economic development (see 5.1.1) but also outlines how it can be operationalized for empirical application using a wealth of qualitative and quantitative data to capture the concepts of interest. Importantly, this also requires historical and political analysis in order to understand the nature of the prevailing

political settlements. The case studies of Laos and Rwanda have shown that the integrated framework can be used to assess the extent to which a country has implemented pro-poor development strategies and how it has done so. Further research could explore how changes in political rights and civil liberties can be methodologically and conceptually incorporated into to the study of growth-poverty trajectories.

- **Testing non-monetary poverty measures (paper II):** This is the first study to compare the MPI and the EDI frameworks both conceptually and empirically. It does so by using primary data from two different research sites and applying both indices to the same sample in each site. Moreover, this is also the first study to replicate and test the reliability and validity of the EDI framework. It argues that the EDI provides a simple and reliable way of identifying the poorest households in rural high deprivation contexts. Future research should investigate the impact of different distributions and weighting systems, of different selection criteria of consumer goods, of larger sample sizes on the reliability and validity of the EDI, and to what extent the EDI can be useful for comparisons across time or for application in relatively wealthy areas. Finally, comparisons of EDI classifications to anthropometric data would be particularly interesting.

- **Outlining a relational shift in agrarian studies (papers III and IV):** A thorough review of the literature on rural social differentiation reveals a lack of methodological discussion in agrarian studies. Paper III underlines the importance of operationalization as an intermediary step to translate theoretical concepts into fieldwork activities (and vice versa) for quantitative and most qualitative research. It synthesizes the tools researchers have used to operationalize their research questions in general and to overcome the limitations of time-constrained fieldwork for the investigation of long-term processes in particular. It contrasts the stratification approach, based on the quantification of discrete household characteristics, with a relational approach investigating the material basis of the interactions through which social groupings emerge, are changed, or reproduced. It advocates for a relational shift and outlines what this entails. Paper IV applies such an approach to the study of labour and class relations and shows how it can be operationalized. It adapts Patnaik's (1987) labour-exploitation index to the local context and integrates it with an analysis of the drivers, functions, and power relations underlying the key mechanisms of labour mobilization in Nyamasheke. This reveals localized trajectories of accumulation and exploitation among generally land-poor households that may look similar from afar and are all too often lumped together as undifferentiated smallholders. Further research could develop the idea of a "biography of relations" and investigate ways these and other micro-level dynamics can be linked to different actors (e.g. cooperatives, companies, and authorities) and to wider tendencies at different scales and with different temporalities attached to them.

5.1.4 Policy Implications

Based on these conceptual, empirical, and methodological contributions as well as further analyses contained in the four research papers, the following policy implications can be derived:

- Development research and strategies should focus more on the labour relations underlying local political economies and systems of accumulation. There is a need to counter the "job dementia" (Amsden, 2010, p. 60) espoused in much development thinking. Paper I assesses the employment nexus in the recent growth trajectories of Laos and Rwanda, and papers II and IV demonstrate the dependence of many of the poorest households on casual rural wage employment in particular. A core objective for development cooperation could be to **improve the working conditions and**

increase the number of paid working days for the poorest households in rural areas. This should involve a two-pronged approach. On the one hand, this implies reappraising demand-side policies (Amsden, 2010; Cramer et al., 2020) and tightening rural labour markets through investment incentives in labour-intensive activities, public work programmes, and other means (Oya & Pontara, 2015a). On the other hand, it also implies harnessing the emancipatory potential of labour movements and promoting more democratic forms of work that reduce exploitative relationships (Selwyn, 2016b).

- To improve policy design and effectiveness, statistical and research tools need to be adapted to investigate the nature of these labour relations. This could involve a **relational shift** to understand the drivers, functions, and power relations of local labour arrangements (as outlined in papers III and IV) and **improved statistical systems and survey design** to capture rural labour dynamics (notably working conditions, the distribution of effective days of wage work, and trends in real wages, see Oya & Pontara, 2015a).

- Focusing on rural wage employment should not disregard the importance of land as a locus of home and food provision, however small. Especially in settings where sustained alternative employment opportunities are lacking (notably in the highly volatile labour markets in Nyamasheke, as shown in papers II and IV), land ownership secures a modicum of subsistence (see also Li, 2011). While this is frequently nowhere near enough to lift a household out of poverty even with associated supply-side interventions, it is often indispensable for sheer survival. Papers I, II, and IV argue that **safeguarding the assets of poor households, first and foremost land**, remains vital to any pro-poor development strategy, even more so as land pressures continue to rise in both Laos and Rwanda.

- Along with a growing body of literature (e.g. Cramer et al., 2020; Van den Broeck et al., 2017), this dissertation highlights the macro- and microeconomic importance of export agriculture in general (paper I) and more specifically through the example of coffee (papers II and IV). Nevertheless, export-led agricultural growth also carries significant risks such as increased dependence on volatile world market prices and exclusionary effects (Hall et al., 2011). The benefits of export promotion in terms of poverty reduction are thus not automatic, and both case studies presented here reveal contradictory results. The crop choice matters, especially regarding labour intensity and potential for value addition, yet, as in Laos and Rwanda, a single crop can be associated with a range of organizational frameworks and socio-economic dynamics suggesting that rigid notions of "crop essentialism" (Hall et al., 2011, p. 88) should be avoided. To harness its positive effects, **export promotion should be integrated in a national development strategy that prioritizes the creation of productive employment, local value addition, and the sustainable management of primary resources**. Donors should support partner governments in increasing their capacity to regulate foreign direct investment in line with national priorities. This includes the design of incentives tied to specific conditions that increase positive spillover effects and discipline unproductive investors. The worrisome effects of the recent rise of land concessions and leases in Laos reveal the dangers of a relatively unfettered open-door policy.

- **Non-monetary poverty measures such as the MPI and the EDI provide fruitful avenues for programme targeting and impact evaluation** – depending on policy objectives and local context (paper II). The MPI provides a flexible framework to display multiple forms of deprivation across a single household, whereas the EDI is especially relevant to identify extremely low levels of

private consumption in rural high deprivation contexts that operate in informal markets and often outside the monetized economy.

- Papers II and IV suggest that there is a strong need to **strengthen measures to combat food and nutrition insecurity**, particularly in Nyamasheke where lack of land and employment lead to widespread suffering in the lean seasons with serious and detrimental long-term effects on household poverty.

- Rwanda and, to a lesser extent, Laos have shown that **large-scale investments in the provision of basic services and social protection** can underpin substantial reductions in multidimensional poverty (paper I). While problems remain and may create perverse effects associated with the coercive top-down character of policy implementation in both countries, this is an important channel to reduce poverty. Social provision, however, should not be conceived of in isolation and cannot replace the necessity of structural change and productive employment for long-term poverty reduction (and indeed for the sustainable financing of social protection schemes, see also Oya et al., 2013).

- In the context of increasing feminization of the labour force (see for example Bigler et al., 2017, on Rwanda), specific measures can **support female wage workers, and particularly widowed and divorced women, in accessing paid employment**. Given that women continue to be seen as predominantly responsible for childcare on the Bolaven Plateau and in Nyamasheke (see particularly paper IV), these measures include the provision of crèches or at least "safe spaces" for children on plantations and washing stations and a more flexible design of public work programmes (e.g. in terms of work time and payment) to allow women facing a myriad of time constraints to benefit from them.

5.2   Outlook

This PhD started with the quest to understand growth-poverty trajectories in Laos and Rwanda and their manifestations in the lived experiences of people in the main coffee export zones. It has shown both the brutal as well as the subtle ways in which social differentiation takes place under so-called "miracle growth" episodes, shaping livelihoods in Nyamasheke and on the Bolaven Plateau. I have argued that labour relations are at the centre of this process. By providing a window into the organization of production, reproduction, and exchange, they are indispensable for a relational understanding of poverty.

Through transparent and reflexive mixed methods research, this dissertation has continued to push methodological debates. Only by taking an interdisciplinary and holistic perspective, and by linking local manifestations and lived experiences at the micro level to wider tendencies and transformations at the macro level, can we hope to do justice to the complexity and real-life implications of the social phenomena we study. Such a progressive political economy approach can at the same time overcome both the deductive logic and conservatism of neoclassical economics and the excesses of post-modern constructivism. Moreover, if we are to achieve the Sustainable Development Goals, this approach can be fruitfully integrated with political ecology in future research to propose pathways to truly sustainable development within our planetary boundaries.

What then do my findings tell us about the role of coffee for the prospects of the research participants? It is hard to imagine the landscapes of Nyamasheke and the Bolaven Plateau without it, so engrained the crop has become in both cultural and ecological meanings. In a certain sense, then, coffee may indeed be "the cow that never falls". Yet, in times of crisis it has never directly fed anyone and its vulnerability to

diseases and low market prices are just some of the factors that have revealed the disappointment of erstwhile hopes, most tragically in the leadup to the genocide in Rwanda but more recently in the COVID-19 pandemic which has once again underlined the fragility of global markets. Coffee surely is no miracle crop if there ever can be one. Understandably, no poor household I ever visited would devote all their land, or even most of it, to coffee. Even so, their livelihoods have remained closely intertwined with the coffee economy that espouses both threats (for example by large-scale land grabs in Laos) and potential (through the provision of desperately needed paid work and of basic services partly funded by its proceeds). The coffee heartlands of Laos and Rwanda thus provide an entry point to explore the contradictory effects of capitalist development in the Global South. Coffee will continue to be an economically significant cash crop in both research sites, but its poverty-reducing potential will remain limited as long as land pressures continue to increase and local processing facilities remain underdeveloped. The taste of "miracle growth", like that of coffee itself, is bittersweet indeed.

Importantly though, this need neither lead to deconstructive pessimism nor to calls for anti-developmental or utopian agendas (see Cramer et al., 2020, on "possibilism"). Instead, the historical record contains lessons that can be garnered for a progressive political economy approach that acknowledges the importance of structural change, the role of the state in driving it, and the uneven impacts of capitalist development – while at the same time proposing substantive pro-poor development strategies that put human well-being at the centre. Our collective task is to create real alternatives that enable more peaceful and democratic socio-economic transformations where each and every person can fully assert their social and political rights with dignity and without jeopardizing the ability of future generations to do the same.

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PART II:
RESEARCH PAPERS

Paper I: The political economy of pro-poor growth in Laos and Rwanda compared

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Journal: Review of International Political Economy

Status: Revised version, currently under review

The political economy of pro-poor growth in Laos and Rwanda compared

Economic growth continues to be a priority for developing countries, yet growth-poverty linkages remain inadequately specified. This article presents a framework to account for pro-poor economic development by conceptualizing political conditions as well as the key mechanisms linking growth and poverty. To this end, the article integrates political settlements analysis with the literature on pro-poor development strategies. The resulting framework is empirically applied to scrutinize two recent development 'success stories', those of Laos and Rwanda. Both countries emerged from a violent past to record over two decades of fast economic growth. The paper assesses how they have done so and to what extent their development strategies have been pro-poor. On the one hand, economic growth has enabled large-scale investments in social service provision, leading to massive reductions in multidimensional poverty in both countries. On the other hand, there is a disconnect between growth in specialized sub-sectors and continued precarious wage employment for many, compounded by intensifying pressure on land and, in Laos, rising inequality. The article shows how adoption of an integrated framework combining political settlements analysis with a critical investigation of growth-poverty linkages is crucial to understanding growth trajectories and uneven outcomes in terms of poverty and inequality.

Introduction

Sustained economic growth remains a key driver of poverty reduction in the Global South. The mechanisms underlying this link and explaining the large range of variations across time and space are, however, hotly debated – along with the contradictory effects of economic growth and the potential for reinforcing pro-poor outcomes.

Our contribution is both conceptual and empirical. On the conceptual level, we endeavor to answer the following research question: how can the political conditions and key mechanisms linking growth and poverty be conceptualized to account for pro-poor economic development? To this effect, part I presents an integrated framework combining the 'pro-poor development strategy' (PPDS) with the 'political settlements' (PS) approach. We complement the PPDS perspective with insights from heterodox political economy and argue that, while it is a useful analytical tool, it fails to take into account political conditions or explain how some countries manage to overcome key structural challenges to growth while others do not. The PS approach provides useful insights on this issue by explicitly analyzing power and accounting for institutional effectiveness. Yet it does not adequately specify or problematize growth-poverty linkages, assuming implicitly that growth benefits will eventually trickle down. We present a framework to conceptualize pro-poor growth that integrates the PPDS and PS approaches. This not only provides a theoretically grounded and policy-relevant avenue to explore development trajectories, but represents a pragmatic advance on the impasse created by entrenched and often ideologically tinged debates about the 'right' development paradigm.

Part II provides the first comparative study of the political economy of the Lao PDR (hereafter Laos) and Rwanda, which is surprising given the countries' recent growth successes and modernist aspirations. This is also the first time that political settlements analysis is used to study the distribution of power in Laos. We empirically apply the integrated framework developed in part I by employing qualitative and quantitative evidence to assess the nature of the political settlements and growth trajectories

in the two countries – and how these trajectories relate to the evolution of poverty over the last two decades. On the empirical level, therefore, this paper shows how the integrated framework can be used to answer questions about the extent to which Laos and Rwanda have implemented pro-poor development strategies and how they have done so.

Part I: Conceptualizing the linkages between growth and poverty

Part I develops a conceptual framework that aims to account for variations in poverty reduction across different growth trajectories in developing economies. We argue that this requires us to take a relational view of poverty as embedded in processes of structural change while also exploring the political conditions underlying these growth-poverty trajectories. For this, we build on the PPDS approach before integrating it with the PS approach into a new conceptual framework.

The pro-poor development strategy (PPDS) approach

The frequent failure of economic growth to trickle down to the poor has led to renewed formulations of the links between growth and poverty (see Saad-Filho, 2011, for an overview). We take as our starting point the pro-poor development strategy (PPDS) approach developed by Saad-Filho (2007, 2016) because it is ambitious in terms of social justice, reaffirms the role of structural change and understands growth and poverty as socially embedded. A PPDS is characterized by five core principles (Saad-Filho, 2016). First, it identifies mass poverty as the greatest problem facing developing countries. Importantly, in this perspective, growth is seen to alleviate as well as to create poverty, and so the focus is on reducing poverty rather than on maximizing growth. The purpose of economic growth is therefore strictly instrumental: to increase the resources of the state (for investment, social service provision, and redistribution) as well as of communities and individuals (to increase their capabilities). Second, the PPDS approach defines pro-poor growth in relative terms, i.e. 'pro-poor growth must benefit the poor more than the rich; growth is pro-poor when it reduces relative as well as absolute poverty' (Saad-Filho, 2007, p. 516). Third, under a PPDS, growth should focus on sectors with the greatest direct benefits to the poor. This underlines the need for public sector intervention, notably industrial policy. Fourth, redistributive measures and advances in social welfare should be broad-based under a PPDS and pursued directly. Social safety nets and conditional transfers are regarded as insufficient. Finally, the PPDS approach believes that any efforts to reduce poverty must be accompanied by measures to foster equality.

While the social relevance and ambition of the PPDS perspective are self-evident, its analytical strength lies in its conceptualization of economic growth processes and the relational understanding of poverty that it employs. The following two sections draw on heterodox political economy to develop the PPDS approach further by specifying the role of structural change and associated governance capabilities as well as the nature of the interlinkages between growth and poverty.

Structural change and governance capabilities

Structural change, defined as a shift from economic activities with low productivity to activities with higher productivity, is crucial for long-term poverty reduction in developing countries (Cramer et al., 2020) and thus a necessary ingredient of a PPDS. This implies that there are limits to how much growth can be sustained without increasing productivity, i.e. by adding more inputs and increasing the volume of production. When poor countries are competitive based on low production costs alone, growth is often based on low wages and relative poverty (Whitfield, 2012). Where structural change takes place across sectors, it usually refers to the rise in manufacturing and associated industrialization, and the concomitant

decline of the share of agriculture in GDP and employment (Timmer, 2014). However, some academics have criticized the traditional emphasis on manufacturing. For example, Newfarmer et al. (2018) highlight the potential contribution of the service sector to structural change, advocating that countries leapfrog manufacturing to a service-driven form of development. Yet services that have the potential to act as productivity escalators require high skills and institutional capabilities that may not yet exist in many developing countries (Rodrik, 2016) and low-productivity services may lead to a race to the bottom in precarious informal jobs (Meagher, 2020). A second criticism of the focus on manufacturing emphasizes the underappreciated role of agriculture. Cramer et al. (2020) question the somewhat artificial distinction between agriculture and manufacturing, arguing that agriculture (especially agro-food processing) may actually acquire high-productivity characteristics that are traditionally associated with manufacturing. Agriculture is also especially important for poverty reduction (Irz et al., 2001; Ivanic & Martin, 2018) and the provision of resources for structural change. Nonetheless, there are limits to structural change when manufacturing does not expand, and recent evidence confirms the importance of manufacturing as an engine of growth in developing countries (Haraguchi et al., 2017).

While most authors agree on the centrality of productivity growth for developing economies, explanations (and resulting policy implications) of productivity growth remain contested. Mainstream analyses stress the importance of liberalizing trade and of correcting market failures to deliver productivity growth (World Bank, 2020). They therefore focus on supply-side measures (Cramer et al., 2020) and market-enhancing governance capabilities. The latter are associated with good governance reforms and aim to increase market efficiency by lowering transaction costs (Khan, 2008). In contrast, heterodox analyses, on which the PPDS approach is based, stress the importance of increasing returns to scale, imperfect competition, and the management of rents (Whitfield, 2012). Thus, the focus is on demand-side measures and growth-enhancing governance capabilities. In this view, structural change does not occur automatically and increased market efficiency is unlikely to lead to sustained economic development – but more likely to be the result of it. Instead, growth-enhancing governance aims to overcome three structural challenges to enable economic development in developing countries: 'maintaining political stability in a context of rapid social transformation'; 'achieving market and non-market transfers of assets and resources to more productive sectors'; and 'managing incentives and compulsions for achieving rapid technology acquisition and productivity enhancement' (Khan, 2007, p. 4). The PPDS approach should include an analysis of growth-enhancing governance capabilities as it helps to situate public sector intervention and to account for successes or failures in achieving productivity growth: a necessary but insufficient condition for large-scale poverty reduction in developing economies. The extent to which Laos and Rwanda have overcome the three structural challenges noted above will be discussed in part II.

From growth to poverty

Having underlined the importance of productivity growth for economic development, this section specifies how it can be linked to poverty from a PPDS perspective.

The PPDS approach understands growth as socially embedded and inseparable from its distributional outcomes (Saad-Filho, 2011): growth does not exist in the abstract but is always historically located in uneven and conflictual processes of economic development. Similarly, the PPDS perspective conceptualizes poverty not in residual terms, i.e. by assuming linear trickle-down effects, but in relational terms, i.e. by investigating 'the causes of rural poverty in terms of *social relations* of production and reproduction, of property and power, that characterize certain kinds of development, and especially those associated with the spread and growth of capitalism' (Bernstein, 1992, p. 24, italics in original). A relational approach also acknowledges the contradictory effects of growth – when growth creates poverty and increases vulnerability through, for instance, environmental destruction (Harriss-White, 2006) or growing precarity (Breman & van der Linden, 2014). Therefore, the link between productivity and poverty

is not automatic but depends on a large number of factors, not least the political power of labor (Selwyn, 2019).

The relational approach to poverty highlights the need to interrogate the terms of inclusion in the growth process (Oya et al., 2013) and makes use of concepts such as adverse incorporation (Hickey & du Toit, 2007), poverty chains (Selwyn, 2019) or immiserizing growth (Shaffer et al., 2019). As a result, the PPDS approach is not only about supporting those who are disproportionately exploited by the growth process: it is also about changing the growth process itself, by making its contradictions visible and devising policies to alter growth trajectories.

By embedding growth and poverty in social power relations, the PPDS perspective can make the interlinkages between growth and poverty explicit. While a state's main ways of increasing its resources are through foreign exchange earnings, taxation, and development assistance, at the household or individual level two channels can be identified through which increased resources reduce poverty directly (Osmani, 2004): the social provisioning channel (services to the poor) and the personal income channel (higher incomes to the poor), both of which can be utilized to enhance the capabilities of poorer segments of the population. Productivity growth (ensuring the accumulation of necessary resources) and equity concerns (ensuring that the poor benefit disproportionally) are essential for both channels. A key variable determining the social provisioning channel is social policy. The personal income channel on the other hand is about directly increasing the purchasing power of the poor. Two intermediating variables stand out, both intimately tied to the relations of production: first, the price and availability of goods and services that are most meaningful to poor households. That is, a PPDS would focus on the non-inflationary supply of, ideally domestically produced, basic consumer goods (see Cramer et al., 2020). The second, and arguably even more important variable, is the quantity and quality of (self-) employment, i.e. the extent of unemployment/underemployment and the returns to labor. This is at the core of what Osmani (2004) terms the 'employment nexus' between growth and poverty and is central to understanding the terms of inclusion into the growth process from a relational perspective. An employment focus should, however, not detract from the need to safeguard the existing assets of the poor, most notably land and common resources, that may not only be valued more highly but provide a minimum of security as a fallback option. This is especially important given the job-deficient character of many growth experiences and the precarious nature of much employment across the Global South (Li, 2011).

The previous sections have outlined the core principles of the PPDS framework and developed it further by drawing on heterodox scholarship on the political economy of growth and poverty. However, while the PPDS framework provides a useful analytical perspective to capture growth-poverty interlinkages in developing economies, it does not adequately explore the political conditions under which these processes occur and how growth-enhancing governance capabilities can be successfully implemented. We therefore argue that it needs to be integrated with a historically grounded analysis of power and politics provided by the PS approach.

The political settlements (PS) approach

Political settlements analysis aims to improve our understanding of the effectiveness of policies and institutions in particular contexts (Khan, 2018a) and thus usefully complements the PPDS perspective.[1]

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[1] There has been a burgeoning political settlements literature over the last decade with sometimes differing understandings of what a political settlement is or how it can be analyzed (for a recent review see Kelsall & vom Hau, 2020). This paper closely follows the interpretation of Mushtaq Khan (2010, 2018a) – both for reasons of scope and because it is grounded in an analysis of growth-enhancing governance capabilities and understands a political settlement as a distribution of organizational power rather than as simple agreements among elites (see Khan, 2018a; in contrast to, for example, Di John & Putzel, 2009).

Whereas new institutional economics and the developmental state literature both tend to neglect political processes, the PS approach incorporates power and history explicitly (Khan, 2019). What matters from this perspective is not so much the specific form of an institution or formal regime type but 'the *compatibility* of institutional structures with pre-existing political structures of political organization and patron–client structures that are part of the political settlement' (Khan, 2008, p. 146, italics in original). Political settlements are thus defined as 'as social orders characterized by distributions of organizational power that together with specific formal and informal institutions effectively achieve at least the minimum requirements of political and economic sustainability for that society' (Khan, 2018b, pp. 670–671). Most developing countries are characterized by clientelist political settlements where powerful groups may influence economic and political outcomes independently of formal rights, often through patron–client networks (Khan, 2010). Two important variables accounting for the diversity among developing countries are the organization of ruling coalitions and the characteristics of emerging capitalists.

Ruling coalitions can be distinguished through two sets of criteria: the horizontal distribution of power (i.e. the strength of excluded political factions) and the vertical distribution of power (i.e. the strength of lower-level political factions within the ruling coalition). Strongly centralized coalitions where the power of excluded as well as lower-level factions is weak are described as 'potential development coalitions' (Khan, 2010, p. 65). Khan argues that this is the most favorable combination as it gives the ruling coalition both a long time-horizon and effective implementation capabilities (although it does not guarantee developmental outcomes). While many of these coalitions, including Laos and Rwanda, are highly elite-centered, broad-based bottom-up social movements may also be possible in this kind of political settlement and would be desirable from a PPDS perspective (see Saad-Filho, 2007, on the necessity of democratic states as a tool for collective action; and Selwyn, 2016, on labor-centered development).

The characteristics of emerging capitalists are another important dimension that can help explain variation in outcomes (Khan, 2010). To this end, clientelist political settlements can be categorized according to the technological-entrepreneurial capabilities of emerging capitalists and their holding power vis-à-vis the ruling coalition. The first refers to the extent to which investors can drive technology acquisition or are restricted to the use of simple technologies, and the second to the extent to which they are easy to discipline or not. Successful developmental coalitions, e.g. South Korea between the 1960s and 1980s, have often had productive investors with high capabilities but insufficient holding power – which makes them easy to discipline and allows the implementation of an effective industrial policy (Khan, 2010).

PS analysis is relevant for a PPDS approach for two main reasons. First, it can account for growth-enhancing governance capabilities and how they have been implemented. Second, it can shed light on how the benefits and costs of increased growth have been distributed across society, taking note of the distribution of power (the distributional regime, see Lavers, 2019). Despite these important advances, the PS approach has its own limitations. Much like the developmental state literature, it remains an elite-centered, top-down perspective that downplays the possibility of democratic development (see Selwyn, 2016) and is based on a national unit of analysis (Goodhand & Meehan, 2018). Second, it cannot be assumed that coalitions based on strong vertical and horizontal power are necessarily growth-oriented, nor that competitive clientelism performs automatically poorly (Sen, 2015). Third, and most important for our analysis here, PS scholarship has not adequately addressed relational poverty in analytical and empirical terms. Growth episodes are often assumed to eventually trickle down in some way or another to improve standards of living, but these mechanisms and their limitations have not been made explicit. Recently, some authors have further developed the PS approach by paying more attention to the role of ideology and discourse and the way that political conditions and the distribution of power shape inclusive development and social protection (Hickey et al., 2015). Moreover, Chinsinga et al. (2022) use PS analysis to explain poverty trends across four developing countries. However, neither contribution systematically engages

with the economics of structural change and pro-poor growth, especially the channels through which the growth process itself alleviates *and* creates poverty. We therefore argue that the study of political settlements must be extended by the PPDS perspective outlined above to understand the relationship between growth and poverty.

Table 1: Comparative overview of PPDS and PS approaches.

Approach	Pro-poor development strategy (PPDS)	Political settlements (PS)
Theoretical underpinnings	Heterodox economics drawing on post-Keynesianism, institutional economics and Marxian political economy, inter alia	Heterodox political economy drawing on historical materialism in a critique of new institutional economics
Selected contributions	Osmani (2004), Saad-Filho (2007, 2016), Shaffer et al. (2019), UNRISD (2010)	Di John and Putzel (2009), Gray (2018), Kelsall and vom Hau (2020), Khan (2010, 2018a)
Analytical focus	The study of the relationship of poverty and economic development to ultimately satisfy basic needs and promote equality	The study of the distribution of power in society to account for institutional as well as policy effectiveness (and ultimately to understand conflict and development trajectories)
Assumptions/points of departure	Growth and poverty are socially embedded; efficient markets do not guarantee poverty reduction; equity is intrinsically valued; history matters	Institutions and their implementation are shaped by power relations and economic structures; history matters
Implications	Pro-poor growth must reduce relative as well as absolute poverty (at least relative or strong-absolute definition of pro-poor growth); strong role for state coordination and public investment	Developing countries are characterized by clientelist political settlements where holding power is not aligned with formal institutions; long time horizon and effective implementation capabilities are key to developmental success
Main strengths	Ambitious in terms of social justice; problematizes growth-poverty interlinkages by taking a relational view of poverty; reaffirms the role of structural change	Integrates power and politics in the analysis of economic development; explains differences in institutional effectiveness across contexts; considers structural challenges of developing countries
Main gaps	Does not account for the political conditions underlying individual growth-poverty trajectories; its scope is typically limited to material well-being	Tends to assume that growth trickles down and typically takes a residual view of poverty; does not specify growth-poverty interlinkages; often elite-driven view with nation-state focus

Notes: Underlined authors are taken as a starting point for this article.

Table 1 presents a comparative overview of the PPDS and PS approaches. It shows that while the former is a useful analytical tool to problematize growth-poverty interlinkages, it lacks a clear conceptualization of the political conditions underlying these processes. In contrast, the PS approach provides an analysis of the distribution of power in a society and helps explain the implementation (or lack therefore) of certain governance capabilities and other institutions but does not adequately specify how these may alleviate or reproduce poverty (the analysis of these capabilities and their effects is thus an important connector between the PS and PPDS approaches). The next section presents a new conceptual

framework integrating the two approaches to account for pro-poor economic development in developing economies.

An integrated framework to conceptualize pro-poor growth trajectories in developing economies

Figure 1 outlines our integrated framework conceptualizing the political conditions and key mechanisms linking growth and poverty in order to account for pro-poor economic development. The structure of the ruling coalition and the political power of emerging capitalists shape the distribution of power, which together with the institutional structure constitutes a political settlement. The compatibility of these two elements in a political settlement shapes the creation, implementation, and effectiveness of institutions, i.e. the extent to which growth-enhancing governance capabilities emerge that can overcome key structural constraints in developing countries. This process confers costs and benefits to particular groups. The extent to which purchasing power (through the employment nexus but also e.g. through changes in consumer prices) and social provision (through social policy but also e.g. through changes in access rights) increase or decrease as a result determines changes in poverty levels. Crucially, the distributive outcomes feedback and affect the institutional structure and distribution of power in the political settlement through, for example, social movements or changing alliances in patron–client networks.
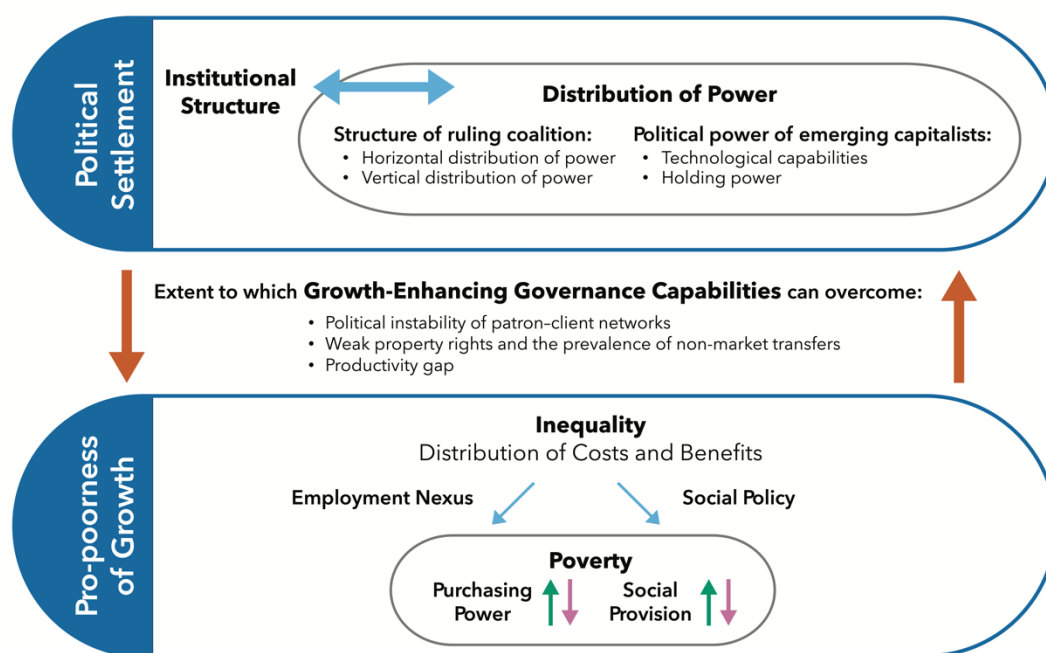
Figure 1: An integrated framework to conceptualize pro-poor growth trajectories in developing economies. Elaborated and adapted from Khan (2008, 2010) and sources cited in text.

Part II: Growth trajectories in Laos and Rwanda

Part II applies our conceptual framework to a comparative case study of Laos and Rwanda and assesses the extent to which the two countries have implemented pro-poor development strategies and how they have done so. The empirical application follows the structure of the integrated framework presented in figure 1. Key concepts are operationalized as laid out in table 2.

Table 2: Operationalization of key concepts for empirical analysis (sources in text).

Concept	Operationalization	Empirical assessment/indicators[b]
Political settlement	Structure of ruling coalition (horizontal and vertical distribution of power)	Historical and political analysis; comparative datasets
	Political power of emerging capitalists (technological capabilities and holding power)	Historical and political analysis; comparative datasets
Growth-enhancing governance capabilities[a]	Political stability	State-building processes; absence of large-scale violent conflicts
	Re-allocation of property rights	Extent and effects of non-market transfers
	Technology acquisition and productivity growth	Analysis of economic reforms and growth trajectory; sectoral composition
Pro-poorness of growth	Employment nexus	Provision of decent and productive employment
	Social policy	Provision of basic services, notably health and education
	Inequality and poverty	Changes in monetary (e.g. consumption or income) and non-monetary (e.g. multidimensional) poverty; Gini index and Palma ratio; growth incidence curves; inequality in land access and access to basic services (see social policy)

Notes: [a] The analysis of growth-enhancing governance capabilities and their effects is an important connector between the study of political settlements and pro-poor development strategies.

[b] Shows how concepts are captured through the qualitative and quantitative evidence used in the article. Due to limited space, each concept can only be briefly assessed based on selected indicators. We refer interested readers to the references contained in the text for more exhaustive empirical discussions.

Laos and Rwanda are both classified as 'least developed countries' (UNCTAD, 2021) but differ vastly, not least in their historical backgrounds, geographic and demographic characteristics, and ideological framings (centered around socialism in Laos and neoliberalism in Rwanda). Despite largely different 'initial conditions', Laos and Rwanda have recorded sustained economic growth over the last two decades (figure 2): between 1999 and 2019 annual GDP per capita growth averaged 5.4% in Laos and 4.6% in Rwanda (World Bank, 2022b).[2] This indicates that both countries have overcome some of the structural limitations affecting developing countries, although under hot debate are explanations for this success, the extent to which the respective trajectories have been sustainable (economically and socially – not to mention environmentally), and the degree to which they have increased material well-being. Laos

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[2] The long-term impacts of the COVID-19 pandemic are difficult to predict but Laos and Rwanda have since fallen into their first recessions since the 1998 Asian financial crisis and the 1994 genocide respectively, and poverty levels are projected to increase in both countries (World Bank, 2021a, 2021b). The focus of our empirical analysis is on the two decades before the COVID-19 outbreak.

and Rwanda thus offer powerful case studies to apply our integrated framework. To this end, the following sections will examine (a) the political settlements in Laos and Rwanda, (b) to what extent they have similar governance capabilities to overcome critical structural challenges (despite contrasting discursive framings), and (c) to what degree the resulting growth trajectories can be judged to be pro-poor.
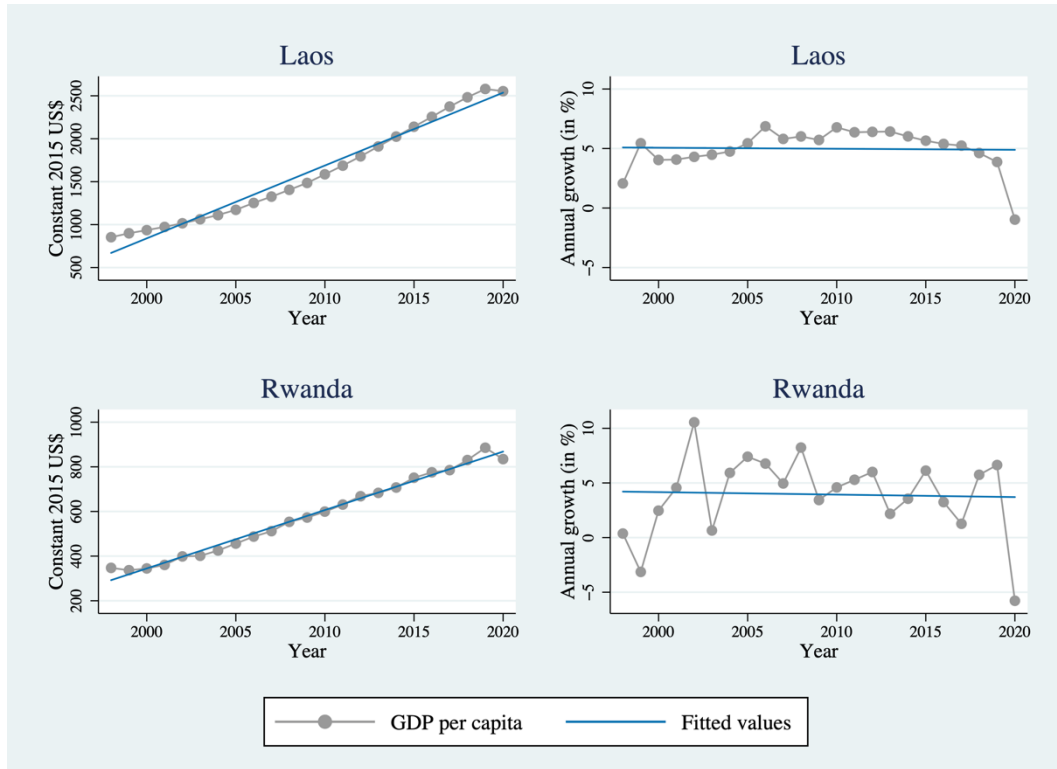
Figure 2: GDP per capita growth in Laos and Rwanda: 1998–2020. Source: World Bank (2022b).

Political settlements

Structure of the ruling coalitions

Drawing on quantitative datasets and qualitative research, this section argues that the current regimes in Laos and Rwanda can be characterized as potential developmental coalitions based on the respective horizontal and vertical distributions of power. Both are authoritarian one-party states with little effective contestation from excluded or lower-level factions, and where power is highly centralized.

The new political settlements (PolSett) dataset provides a direct measure of political power in line with Khan's approach (Schulz & Kelsall, 2021). Rwanda's settlement under President Paul Kagame is classified as 'strong-dominant' which is identical to a potential developmental coalition. Unfortunately, Laos is not included in this dataset. In order to compare Laos and Rwanda directly, we refer to the Varieties of Democracy (V-Dem) dataset (Coppedge et al., 2022). For lack of better alternatives, Sen (2019) uses the variable measuring power distributed by social group as a proxy for the horizontal distribution of power. For both countries, it shows that political power is not subject to frequent change and is monopolized by social groups that constitute a minority of the population, suggesting that excluded factions are politically weak. The same dataset also shows that there are no autonomous opposition parties in either country. These findings are in line with the PolSett indicator for horizontal power in Rwanda. Similarly, qualitative analysis confirms the suppression and resulting weak power, if not absence, of

political opposition and the co-optation of large parts of civil society in both Laos (see Punya, 2019; Stuart-Fox, 2005) and Rwanda (see Longman, 2011). A key difference is, however, found in leadership structure: Laos features more collective leadership through the Politburo of the ruling party (Croissant & Lorenz, 2018), whereas Kagame's rule in Rwanda is more personalized.

Assessing the vertical distribution of power is more difficult, not least due to decentralization efforts over the past two decades in both countries. Sen (2019) proposes the V-Dem variable on power distributed by socioeconomic position as a proxy for the vertical distribution of power. According to data for 2021, in both Laos and Rwanda the wealthy enjoy a very strong hold on political power, whereas poorer sections of the population have some degree of influence but only on matters of less interest to the wealthy (PolSett data for Rwanda confirm that the concentration of vertical power is above the mean for all covered countries and that the implementation power of the political leadership is highly concentrated).

Qualitative historical and political analysis is arguably better placed than a quantitative indicator to characterize the power of lower-level factions. Historically, the territories of modern Laos and Rwanda have been marked by regional variations and autonomy (Croissant & Lorenz, 2018; D. Newbury & Newbury, 2000). Regional differences remain important today but are overshadowed by consolidation and centralization of political power through colonial and postcolonial state-building projects. In Laos, the dual structure of party and state, and the resulting dense network of party organizations at all administrative levels, enables the elite to exercise political power nationwide despite a highly decentralized structure, relatively weak state institutions and a certain degree of autonomy at the local level (Croissant & Lorenz, 2018). According to Stuart-Fox (2005, p. 23), decentralization can be understood as an important tool for local patronage and is 'seen by the Party as a means of increasing, not reducing, its power at the local level' – a finding reconfirmed by more recent research (Punya, 2019). Nevertheless, consolidated political power does not directly result in effective implementation capacity but co-exists with low technical capacity, a fragile administrative foundation and bureaucratic incoherence (Creak & Barney, 2018). Since 2000, political, administrative and financial decentralization has also been implemented in Rwanda, though maybe not to the same degree as in Laos. Still, qualitative research similarly confirms that it has increased central control over lower and local levels (Chemouni, 2014; Purdeková, 2011).

In sum, lower-level factions are relatively weak in both states, although they seem to be more powerful in Laos than in Rwanda. This political power partially confers relatively strong implementation capacities to both governments; however, this link is not as unproblematic as is implied by the PS approach. In fact, administrative capacity and bureaucratic coordination remain especially limited in Laos's 'fragmented sovereignty' (Lu & Schönweger, 2019, p. 65).

Following this assessment of the horizontal and vertical distributions of power, both regimes can be characterized as potential developmental coalitions.[3] Indeed, the satisfaction of social and economic needs through government-prescribed developmentalist goals is a crucial pillar of the legitimation of the political settlements in both countries (Croissant & Lorenz, 2018; Huggins, 2017), although such policy measures are often quietly resisted through hidden transcripts and 'weapons of the weak' (Scott, 1985) in the presence of coercive power that limits overt contestation. In pursuit of their goals, both regimes combine a wide range of disciplinary technologies (at the individual level) and governmental forms of power (at the population level) in the Foucauldian sense (Huggins, 2017). Achieving ideals of modernity includes attempts at social engineering, especially with regards to rural smallholders and their practices, which are frequently deemed undesirable: Huggins (2017) documents attempts to construct 'modern farmers' in Rwanda, centered around ideals of entrepreneurship, commercialization, and strict adherence to state policies, whereas Cole and Ingalls (2020) outline continuous government attempts to eradicate shifting cultivation, a practice seen as destructive and backward, in the Lao uplands.

[3] Whereas the PS approach has not been previously applied to Laos, there is a flourishing PS literature on Rwanda that classifies the current political settlement in a similar vein (e.g. Behuria & Goodfellow, 2017; Chinsinga et al., 2022).

Political power of emerging capitalists

Assessing the power of emerging capitalists in Laos and Rwanda is more difficult than identifying the structure of the ruling coalition. Quantitative measures proposed in the literature on state–business relations, such as the presence of private sector umbrella organizations or the frequency of institutionalized public–private dialogues (Sen & Velde, 2009), do not capture the holding power and technological-entrepreneurial capabilities that are of interest here. Informal relations, power imbalances, and insider knowledge evade simple quantification and require in-depth case studies instead. Unfortunately, these are rare, especially in Laos. As substantial Lao-owned businesses remain reliant on their connections to the ruling party (Stuart-Fox, 2005), we may, however, presume that this acts as a disciplining mechanism of the party-state.[4] Nevertheless, 'a full analysis of the Lao political economy and its connections to the party-state system remains to be written' (Creak & Barney, 2018, p. 700).

In Rwanda, particular attention has been paid to the government's use of party- and military-owned enterprises for kick-starting investment and promoting learning in priority sectors.[5] Booth and Golooba-Mutebi (2012) argue that Rwanda exhibits a kind of developmental patrimonialism whereby state–business relations are structured in a way to allow centralized rent management with a long-term time horizon, notably through the use of said enterprises. Behuria and Goodfellow (2017) provide nuance to this view by highlighting variations across time and sectors. This largely positive view of 'party-statals' is contested by Gökgür (2012) who characterizes them as extractive, stifling competition and capturing the state. It is difficult to conclude what this means for the two dimensions (technological-entrepreneurial capabilities of emerging capitalists and their holding power vis-à-vis the ruling coalition) examined here. While foreign investors tend to have high technological capabilities and some holding power, this is sector-dependent and not necessarily the case for private domestic investors, warranting more research in this area.[6]

To conclude, from a PS perspective, we can interpret Laos and Rwanda as two centralized political settlements with a long-term time horizon that combine interventionist, authoritarian high-modernism with economic reforms in what can be called 'market-oriented authoritarianism' (Huggins, 2017, p. 719; see also Kenney-Lazar, 2019). This takes different forms in each country: whereas Rwanda selectively implements neoliberal policies rooted in a Western-style discourse of entrepreneurship (Huggins, 2017), Laos's political economy is centered around a strong ideology of Marxist-Leninist socialism and is arguably best described as a 'socialist market economy' (Bekkevold et al., 2020, p. 12; see Yamada, 2018 on the role of ideology in Laos's economic reforms). What they have in common are the tensions arising from state interventions that create and strengthen markets by promoting private investment and privatizing property rights while seeking to direct and limit the reach of private initiatives.

Governance capabilities

While the two political settlements hitherto described are certainly *potentially* developmental coalitions, their developmental effects cannot be assumed but need to be assessed based on empirical evidence. The remainder of this article therefore combines the PS and PPDS perspectives based on our integrated framework to examine the extent to which these political settlements have displayed governance

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[4] We thank an anonymous reviewer for this point.

[5] The Lao People's Armed Forces are also an increasingly important economic player, particularly through their direct ownership of commercial enterprises in the construction, mining, and agricultural sectors, although there is no reliable data on the nature of the military–business complex in Laos (Croissant & Lorenz, 2018).

[6] The PolSett dataset ranks the technological capability of formal manufacturing firms in Rwanda as high and their level of political power as medium, although it is not clear whether 'party-statals' have been excluded from analysis.

capabilities to overcome key structural challenges affecting developing economies and what effects this has had on poverty and inequality.

Market-enhancing governance capabilities are routinely measured by good governance indicators such as the Worldwide Governance Indicators (see Kaufmann & Kraay, 2022). Figure 3 shows large discrepancies in Laos and Rwanda over the last two decades: while there have been major improvements across all dimensions in Rwanda, save in 'voice and accountability', these governance capabilities have followed a more mixed trajectory in Laos except for a steady increase in 'political stability and absence of violence/terrorism'.
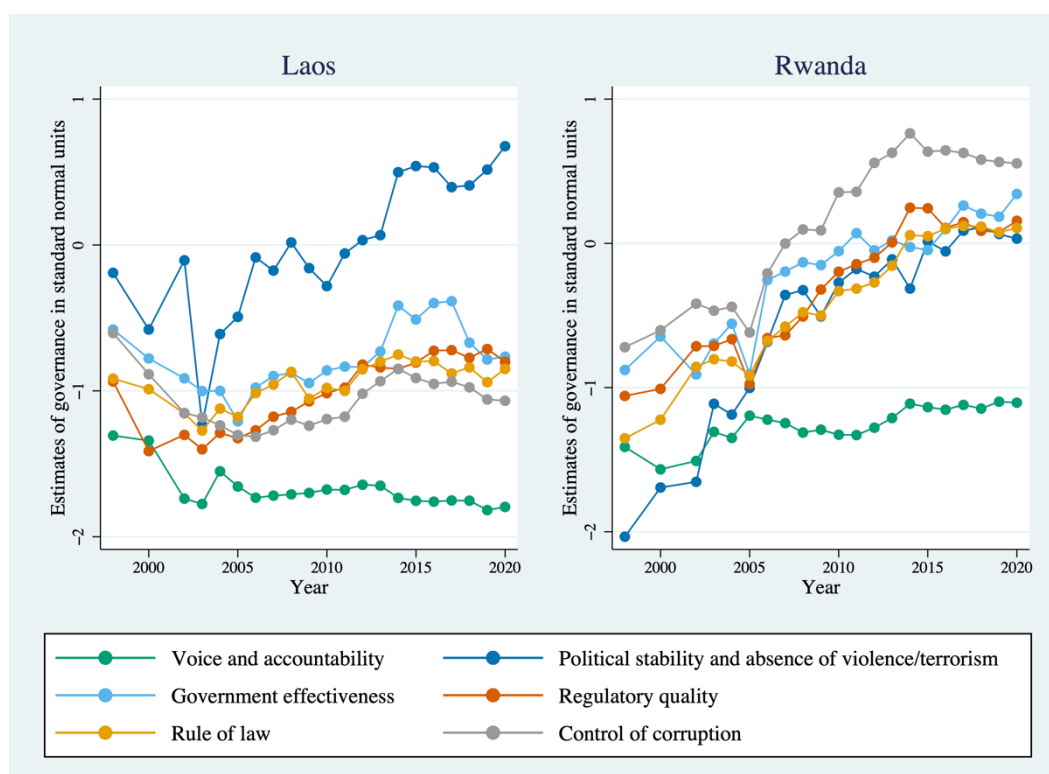
Figure 3: Worldwide Governance Indicators for Laos and Rwanda: 1998–2020. Source: Kaufmann & Kraay (2022).

As argued above, and clearly visible in the case of Laos, market-enhancing governance capabilities may record increasing political stability but cannot adequately explain how Laos and Rwanda have overcome weak property rights structures and achieved productivity growth. This section examines how growth-enhancing governance capabilities have contributed to recent economic growth in line with our integrated framework.

Overcoming political instability

At the end of the 20th century, both Laos and Rwanda emerged from civil wars marked by extreme violence, suffering, and important international dimensions (both colonial and regional dynamics, and in Laos, also the influence of the Cold War). The victorious regimes have implemented far-reaching state building and reconstruction efforts that have included an official narrative of revolutionary liberation in Laos (Tappe, 2017) and of national unity and reconciliation in Rwanda (Reyntjens, 2016); authoritarian leadership through one-party systems and the silencing of political opponents, including through fear, secrecy, rumors, human rights abuses, and political 're-education' (see Thomson, 2011, on Rwanda's

continued re-education efforts; and Pholsena, 2013, on the former use of re-education camps in Laos)[7]; extended reach of the state as well as the securitization of society from the national to the local level (often linked to villagization or resettlement programs in the name of improved service delivery and the eradication of practices deemed undesirable as described by C. Newbury, 2011 for Rwanda; Rigg, 2005 for Laos); and massive public investments in infrastructure and social welfare (see below). Through these and other means, both countries have been extremely successful in maintaining political stability (see figure 3) despite rapid social transformation. This level of stability has provided the basis for economic recovery.

Overcoming weak property rights

A second structural challenge in developing countries is relatively weak property rights due to limited fiscal resources available to protect and implement them. The prevalence of non-market asset transfers is, however, not simply the result of incomplete market reforms but also an important tool to maintain stability and drive structural change (Khan, 2008) – a tool centered around socialist principles in Laos and a discourse of national unity in Rwanda.

Both countries have seen huge transformations in their respective property rights structures since independence. This has been most obvious during the violent conflicts and their aftermath but also includes continued non-market asset transfers through, for example, villagization and resettlement programs, privatization schemes and land reforms. Another way of restructuring property rights and transferring resources to more productive sectors is through the establishment of Special Economic Zones which offer various financial and other incentives to often foreign investors, notably in Laos (Brown, 2019). Crucially, both states' prerogatives extend far beyond the usual 'right of eminent domain' typically used for infrastructure projects. In fact, in Laos and Rwanda, land is seen as belonging to the national community and managed by the state – it is typically granted to landholders through land use rights (Kenney-Lazar et al., 2018; Leegwater, 2015).

While the impacts of asset transfers and the restructuring of property rights vary across time and space, they have intensified pressures over land in both countries and reinforced commodification and associated social differentiation: The population density in Laos is low, but pressure on land has been increasing due to the surge in land concessions and leases driven by foreign investors over the last two decades (Hett et al., 2020). Rwanda, on the other hand, has the highest population density in mainland Africa (World Bank, 2022b) and changes in land relations through land reforms as well as land-sharing and green-revolution policies have similarly increased pressures on land through both market and non-market means (Ansoms et al., 2018).

Non-market transfers and the restructuring of property rights raise two important questions from a PPDS perspective. First, as suggested by Khan (2008), it needs to be assessed whether the outcomes are conducive to productivity growth by creating stable expectations and moving resources to critical sectors. This directly relates to the structural challenge of managing incentives and creating compulsions to achieve productivity-enhancing technological change, which we examine next. The second question, treated further below, asks to what extent these very processes deepen poverty by expropriating households and communities, disrupting livelihoods, and increasing vulnerability.

Overcoming the productivity gap and instigating structural change

This section analyses growth trajectories in both countries over the last two decades and shows that the

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[7] Laos and Rwanda are both ranked as 'not free' based on people's access to political rights and civil liberties (Freedom House, 2022).

structural challenge of managing incentives and creating compulsions for technology acquisition has only been partially overcome.

When the Lao People's Revolutionary Party took power and established the Lao PDR in 1975, they instituted a socialist transformation inspired by the Soviet and Vietnamese experiences (Stuart-Fox, 1997). This included the establishment of price controls and the collectivization of agriculture. The need for legitimacy through post-war reconstruction, disappointing economic results, and geopolitical changes were some of the factors that eventually led to the transition to an open market economy through successive reforms in the 1980s, most notably through the New Economic Mechanism (NEM, see Yamada, 2018). The NEM closely followed the prevailing Washington Consensus at the time and included the abolition of price controls, the liberalization of domestic and international trade, privatization, deregulation, and monetary reform (Rigg, 2005). This broad-based liberalization package was certainly strongly market-enhancing in the sense that it extended or created markets where none had existed before. It was not, however, based on anything resembling a good governance agenda and instead required a 'strong push towards administrative centralization, the consolidation of a political space, and the unification of regionally dispersed economies' to build a national economy (Soukamneuth, 2006, p. 209). Thus, growth-enhancing capabilities to manage weak property rights and stability in a time of transformation were crucial. In purely economistic terms, the reforms were rather successful (Bourdet, 1996) and, after an initial slump, laid the foundations for over three decades of economic growth. The limitations of economic liberalization have, however, become increasingly visible as is manifested in rising inequality and the disruption of livelihoods (see below), the failure of political liberalization to occur, and the nature of the growth trajectory itself.

Laos's recent growth trajectory has been largely driven by the expansion of industry and services, but neither sector has been able to provide significant employment, which remains mostly agricultural (see table 3 and figure 4). A major reason is that the main sources of growth have been capital-intensive sub-sectors based on the exploitation of natural resources, such as hydropower and mining (Asian Development Bank, 2017). It is notable that in contrast, manufacturing has experienced relatively little expansion or productivity growth (World Bank, 2017). Since the introduction of the NEM, Laos has managed to attract large amounts of foreign direct investment (FDI), averaging 4.5% of GDP per year over the period of 1998–2018 (World Bank, 2022b). FDI has been concentrated in the export-oriented sectors of hydropower, mining, and agricultural plantations and has contributed significantly to Laos's economic growth, but there are increasing concerns about inadequate policy design, negative spillovers, the disruption of local livelihood systems and unsustainable sovereign debt (Barney & Souksakoun, 2021; Keovilignavong & Suhardiman, 2018), and the frequent failure of land-based investment projects to become fully operational (Hett et al., 2020; Schönweger & Messerli, 2015).
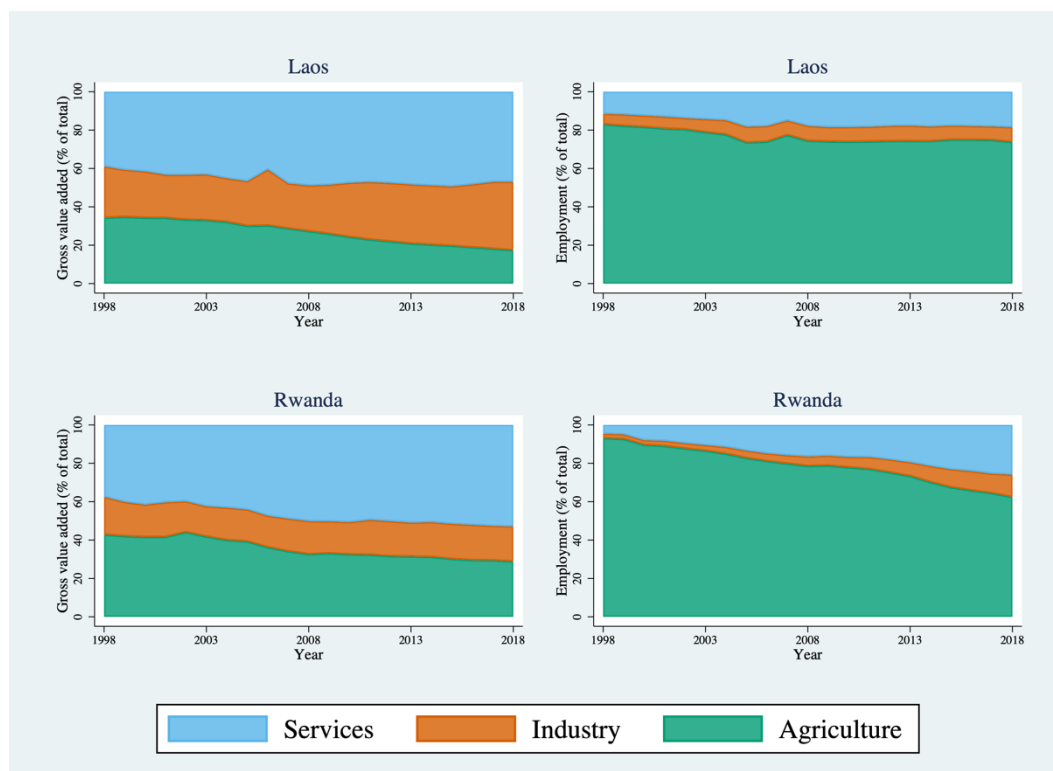
Figure 4: Sectoral gross value added and employment: 1998–2018. Source: de Vries et al. (2021). Note: Mining and manufacturing are included in industry.

In Rwanda, post-war recovery has taken place under the firm rule of the Rwandan Patriotic Front (RPF) led by President Kagame. As in Laos, this was partially based on the promotion of the private sector and the extension of market forces, in parallel to varying degrees of state intervention and rent centralization depending on time and sector (Behuria & Goodfellow, 2017). However, overall, the Rwandan government retains stronger control over its economy, exemplified by its coordinated interventions, comprehensive policy reforms, performance-based development programs, extensive public investment, and the centralization of economic rents using party- or military-owned enterprises (see above). In addition, Rwanda has benefitted from steady external financing (table 3): on the one hand, FDI inflows increased significantly, although they remain markedly lower than in Laos; on the other, Rwanda continues to be aid dependent, whereas the share of official development assistance (ODA) to gross national income (GNI) declined heavily in Laos.

Over the last two decades, the Rwandan economy experienced some structural change, mostly due to a rising service sector, although agriculture remains the backbone of the economy (see table 3 and figure 4). Indeed, Rwanda employed a service-led strategy based on investments in modern, high-end services such as tourism, finance, and real estate (Behuria & Goodfellow, 2019). Yet, although there has been an almost six-fold increase in the employment share of services, over 80% of non-agricultural employment remains informal, most of it centered around traditional services (NISR, 2021), and linkages are lacking between the high-end service sector that has driven growth and the bulk of the (informal) domestic economy (Behuria & Goodfellow, 2019). The rate of industrial growth (largely based on construction and mining) has closely followed the overall growth rate, resulting in a stagnant contribution to value added just below 20%. Manufacturing has been notably missing in the picture, its contribution having shrunk despite recent efforts to revive it through a revamped industrial policy (Behuria, 2019).

Table 3: Key characteristics of recent economic growth.

Variable	(sub-)Sector	Laos	Rwanda	Source
Average annual growth rate of total GVA (in %): 1998-2018		6.68	7.28	
Average annual growth rate of sectoral GVA (in %): 1998-2018	Agriculture	3.07	5.23	
	Services	7.89	9.16	
	Industry (including manufacturing)	8.56	7.03	
	Manufacturing only	4.57	5.74	
Sectoral GVA (% of total GVA): 1998	Agriculture	34.30	42.92	de Vries et al. (2021), version 15 July 2021
	Services	38.92	37.47	
	Industry (including manufacturing)	26.78	19.61	
	Manufacturing only	14.14	8.95	
Sectoral GVA (% of total GVA): 2018	Agriculture	17.32	28.81	
	Services	46.97	52.90	
	Industry (including manufacturing)	35.71	18.29	
	Manufacturing only	8.62	6.46	
Average annual net FDI inflows (% of GDP): 1998-2018		4.49	1.76	
Net FDI inflows (% of GDP): 1998		3.59	0.36	
Net FDI inflows (% of GDP): 2018		7.49	3.80	World Bank (2022b)
Average annual net ODA received (% of GNI): 1998-2018		8.33	16.22	
Net ODA received (% of GNI): 1998		17.08	17.77	
Net ODA received (% of GNI): 2018		3.40	12.05	

Note: We use data from the newly released GGDC/UNU-WIDER Economic Transformation Database (de Vries et al., 2021), which provides data up to 2018, for sectoral analyses instead of the World Development Indicators (World Bank, 2022b) as the employment data of the latter use ILO model-based estimates that are problematic, partly because they exclude subsistence production workers (Kruse et al., 2021). GVA (Gross value added) is measured at constant 2015 prices.

Our assessment somewhat curbs the enthusiasm for the growth 'miracles' of Laos and Rwanda, as both kinds of structural change, rather weak employment linkages, and the relative lack of productivity growth in agriculture and manufacturing cast doubts over the sustainability of these growth experiences. Nevertheless, the partial success in economic development provides resources that can be used to increase welfare. The next section asks to what extent these processes have improved material welfare.

The right kind of growth? Assessing the pro-poorness of growth

Having sketched out the current political settlements and recent growth trajectories, this section builds on the PPDS approach by explicitly linking the growth analysis to the evolution of poverty from a relational perspective.

Employment nexus and social policy

Figure 1 outlines the role of the employment nexus (a central determinant of the personal income channel) and social policy (a central determinant of the social provisioning channel) in shaping the pro-poorness of growth.

The above analysis suggests that the growth trajectories in Laos and Rwanda have not been based enough on productivity growth in low-skilled labor-intensive sectors. As a result, the employment nexus is not as strong as it should be from a PPDS perspective. This finding is well documented, particularly for Laos (see for instance World Bank, 2019a) and rural areas. Heightened land pressures and continued dispossessions (through market and non-market means) have led to increased dependency on wage labor in both countries. In Rwanda, however, the non-farm economy has failed to provide sufficient employment to compensate for acute land scarcity (Bird et al., 2022) and many households increasingly depend on precarious and arduous agricultural wage employment in gendered informal labor markets (Illien et al., 2021). Similarly, in Laos, loss of farmland in villages affected by land-based investments is associated with growing poverty (Nanhthavong et al., 2020) and employment resulting from these land deals has only modestly benefitted affected villages (X et al., 2022 [blinded for reviewers]).

Our assessment is more positive regarding social policy. In fact, one of the major merits of Rwanda's political settlement has been massive investment in the provision of basic services and social protection. Indeed, rapid socioeconomic development has been used as a tool to promote the legitimacy of the current regime (Lavers, 2019). Over the last two decades, Rwanda has implemented a range of social protection policies explicitly aimed at poverty reduction: from public works (through the Vision 2020 *umurenge* program) through compulsory community-based health insurance (*mutuelles de santé*), to the *ubudehe* scheme used to classify households for social protection. While major problems remain – not only related to design and implementation but also to the coercive nature of several aspects of these programs that can have perverse effects – the overall outcomes are impressive for a country with such a low GDP per capita (Ezeanya-Esiobu, 2017), owing not least to substantial development assistance, economic growth, and the structure of the ruling coalition that allows for long-term planning and strong implementation capacity. This is also evident in the provision of basic education. Williams (2017) employs the PS approach to explain the surge in primary education enrolment by the RPF's commitment to performance-led governance and accountability. Nevertheless, he shows how top-down decision-making has contributed to prioritizing access at the expense of quality which remains low.

The social protection system in Laos is much less developed and current investment in social protection is the lowest in the region (United Nations, 2020). However, the Lao government has recently adopted an ambitious National Social Protection Strategy aiming to significantly expand basic social protection services by 2030 (GoL, 2020). At present, the social insurance scheme covers only a small fraction of the population, primarily the public sector and some parts of the formal private sector (United Nations, 2020). There are some targeted social welfare programs providing cash and in-kind transfers but they are mostly limited to short-term support (ILO, 2017). Arguably greatest progress has been made in healthcare coverage, increasing from around 11% in 2008 to 94% of the population in 2018 (Mailfert & Phe Goursat, 2019), and in the provision of basic education (Noonan, 2020).

Changes in poverty and inequality

Having outlined the two growth trajectories and their effects on employment and social policy, this section analyzes direct outcomes in terms of material well-being. Figure 5 tracks selected poverty measures across time. While Rwanda remains significantly poorer than Laos, multidimensional poverty as measured by the global Multidimensional Poverty Index (MPI) has decreased drastically and faster in both countries than

any measure of monetary poverty for the period on which we have data. Indeed, initially high levels of non-monetary poverty are approaching monetary headcount ratios which, until recently, had been relatively lower. However, figure 5 also reveals rising levels of the population vulnerable to becoming MPI-poor (i.e., those deprived in 20–33.33% of weighted indicators) in both countries, suggesting that a singular focus on poverty lines is misleading. Rwanda's experience is particularly striking: while it was the country with the sixth largest reduction in the poverty headcount (out of 80), it also recorded the sharpest increase in the vulnerable population between 2010 and 2014/15 (Alkire et al., 2020).
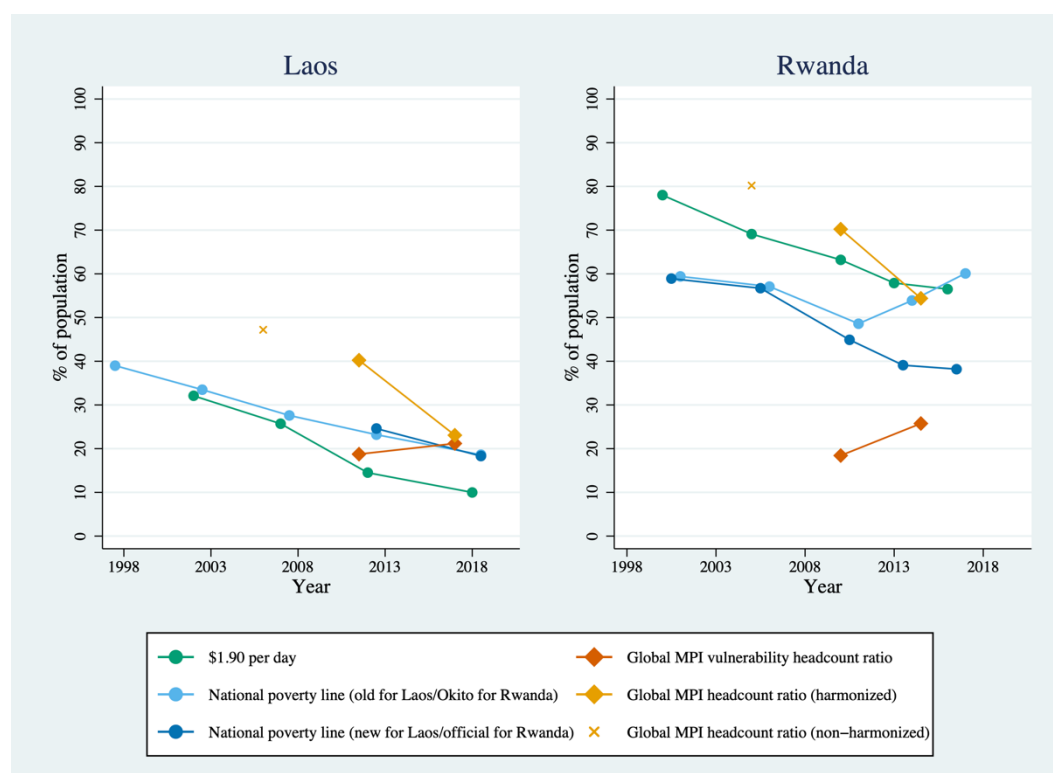
Figure 5: Monetary and non-monetary poverty indicators across time. Note: Non-harmonized MPI headcount ratios cannot be used for direct comparisons across time. Sources: World Bank (2022b, for $1.90 poverty line in Laos and Rwanda), World Bank (2019a, for old and new national poverty lines in Laos), NISR (2018, for official national poverty line in Rwanda), ROAPE (2019, for Okito's poverty line in Rwanda), Alkire et al. (2021, for harmonized global MPI headcount ratios).

Like multidimensional poverty, official government data (informing both the international and national poverty lines) also show consistent reductions in absolute levels of monetary poverty, although progress has recently slowed down, especially in Rwanda. However, these data are vigorously contested by some academics who, while agreeing that poverty decreased in the first decade, find that monetary poverty rates have actually increased drastically in Rwanda since 2011 and are higher than in 2001 (Okito, 2019). The disagreement centers around the use of different price indices to update the poverty line between survey rounds. These differences in the poverty rates themselves render estimations of the 'pro-poorness' of growth somewhat questionable.
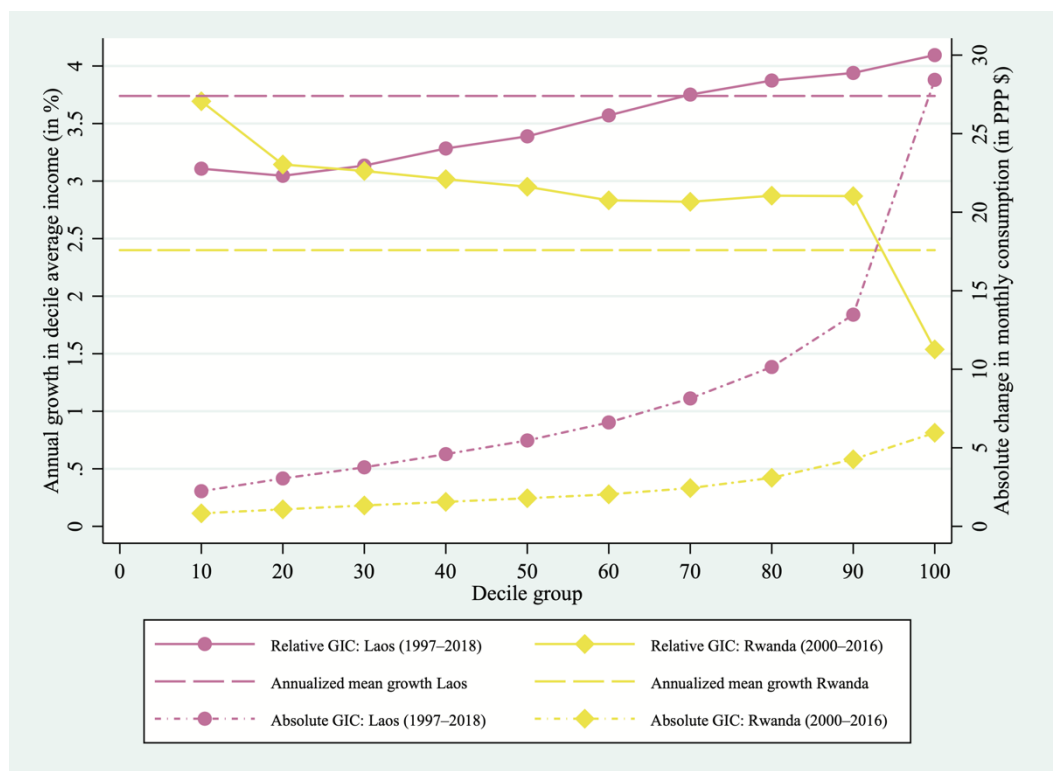
Figure 6: Anonymous relative and absolute growth incidence curves for Laos (1997–2018) and Rwanda (2000–2016). Source: World Bank (2022a).

Figure 6 shows anonymous growth incidence curves (GICs) for Laos and Rwanda based on the World Bank's PovcalNet data set (World Bank, 2022a), which uses official government statistics. Even though annualized mean consumption growth has been much higher in Laos, the growth trajectory has favored wealthier over poorer households in both relative and absolute terms, suggesting that growth in Laos has not been pro-poor over the last two decades. As a result, income inequality shown in figure 7, although lower than in Rwanda, has risen. There have, however, been some improvements in non-income dimensions of inequality, although large discrepancies persist, for example regarding regional and gender inequalities in education or employment (Epprecht et al., 2018).

Rwanda shows an inverse picture (figure 6): a pro-poor growth trajectory in relative terms with declining inequality. However, the overall impression based on official data hides strong temporal fluctuations: respective growth incidence curves for sub-periods reveal that consumption growth was higher for wealthier than for poorer households ('pro-rich') during 2000–2005 and 2013–2016. In any case, absolute changes have been higher for the wealthy, suggesting that even if growth was pro-poor in relative terms, it has not been so according to the strong-absolute definition (for which absolute gains must be larger for the poor than the non-poor, see Klasen & Reimers, 2017). Another hint that the picture presented in figure 6 may be misleading comes from the low growth elasticity of poverty in Rwanda (just below -0.2 between 2001 and 2017 at the $1.90 line), which is lower than in many comparable sub-Saharan countries (World Bank, 2019b). Qualitative research highlights the contradictory outcomes of Rwanda's growth which remain hidden by statistical aggregates and indicate that poverty reduction has been limited (Ansoms et al., 2018). In line with the relative GIC, figure 7 also shows an overall decline in income inequality, although inequality remains at a very high level. To date, no longitudinal analysis of GICs and income inequality has been undertaken following the changes recommended by Okito (2019) and others. Along with the observed reduction in multidimensional poverty, inequality in access to basic services has shown improvements that are less disputed, although important regional and gender disparities

persist (Orrnert, 2018). Land distribution continues to be particularly worrying, with signs that land inequality is increasing and that a large number of rural households have become functionally landless (Bird et al., 2022; Illien et al., 2021).
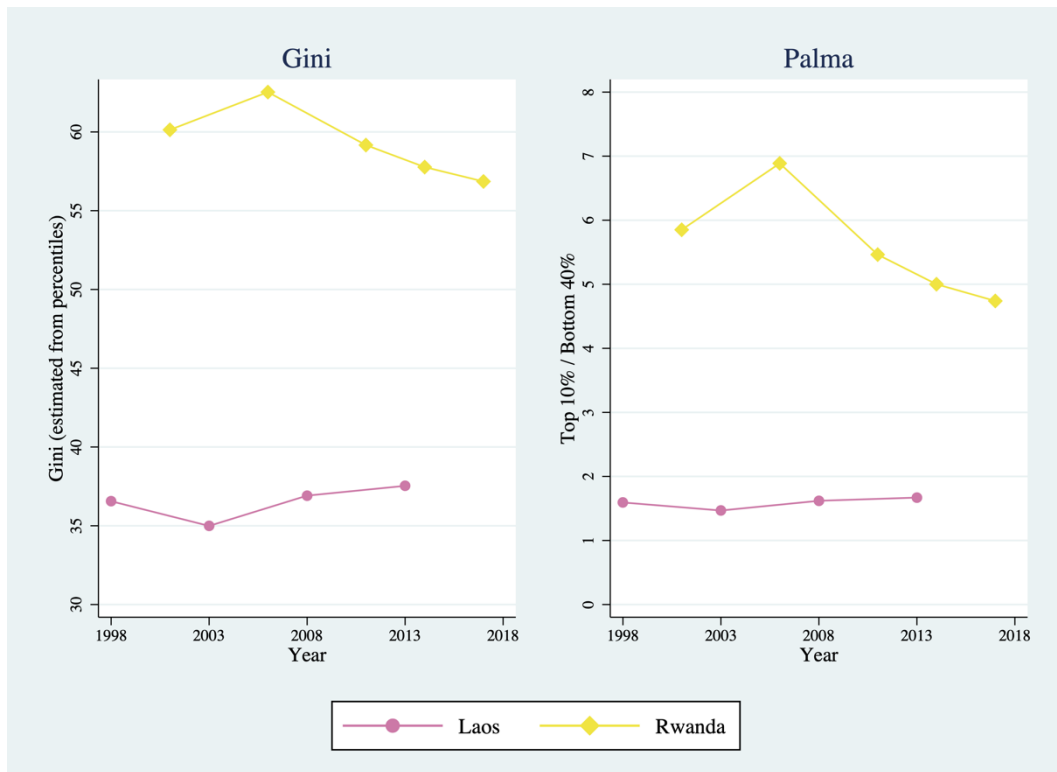
Figure 7: Gini index and Palma ratio across time. Source: UNU-WIDER (2021).

We can conclude that the growth trajectories of both countries have been pro-poor in the weak-absolute sense (i.e. absolute gains for the poor regardless of the gains of the non-poor, see Klasen & Reimers, 2017). First, at least in terms of non-monetary measures, there is no doubt that the overall MPI headcount decreased in both countries, partially due to massive investment in the provision of basic services. Second, growth in Laos has neither been pro-poor in the relative nor the strong-absolute sense and thus from a PPDS perspective, cannot be called pro-poor. Third, while there is agreement that growth in Rwanda has recently become less pro-poor (with fears that this might worsen as a result of the current recession linked to the COVID-19 pandemic, see World Bank, 2021b), it is hardly possible to reach a definite conclusion on the evolution of long-term monetary poverty in Rwanda, given the many open questions surrounding the underlying data. Reasons for the relative stronger pro-poor outcome in Rwanda cannot be found solely within the existence of a potential developmental coalition with a long-term time horizon (Laos has one too) but must be sought in its historical trajectory, smaller patronage system due to the relatively more limited power of regional elites (Shepherd et al., 2016), ideological discourse, and economically interventionist stance.

Conclusion

Laos and Rwanda have recorded two decades of remarkable economic growth. In this article – the first to comparatively study these two trajectories from a political economy perspective, and the first to apply political settlements analysis to Laos – we have employed the political settlements (PS) approach to reveal how the extensive power, long time horizons, and ideological commitments of ruling coalitions in both

countries have been instrumental in driving capital accumulation, providing political stability, and reducing multidimensional poverty through some variant of market-oriented authoritarianism, not least as a means to legitimize the prevailing distribution of power. An analysis of pro-poor growth must, however, go further, interrogating the nature of this growth trajectory and its connections with inequality and poverty. We argue that the pro-poor development strategy (PPDS) approach can help overcome this limitation by employing a relational view of how economic growth both reduces and reinforces poverty unevenly. Drawing on the PS and PPDS approaches, this article provides a new integrated framework that conceptualizes the political conditions and key mechanisms linking growth and poverty in order to account for pro-poor economic development.

By applying this framework to Laos and Rwanda, this paper shows to what extent the two countries have implemented pro-poor development strategies and how they have done so. Only by tracing the ways in which the two political settlements have attempted to overcome structural challenges can we understand the strong growth performances and massive public investments yet ultimately limited success in terms of pro-poor economic development. Our analysis suggests important qualifications to stories of 'miracle growth'. First, there are concerns about the sustainability of the growth trajectories themselves, as they have been based primarily on natural resource depletion (Laos) and the high-end service sector (Rwanda), with only modest linkages to the rest of the economy. Second, inequality remains high in Rwanda and is growing in Laos. Moreover, national aggregates ignore multiple markers of difference and gloss over the fact that particular groups of people remain systematically disadvantaged due to class, gender, ethnicity, or locality. Third, economic growth has increased the vulnerability of large parts of the population (especially in rural areas) and engendered new forms of poverty. Therefore, neither case can be characterized as pro-poor from a PPDS perspective. Nevertheless, our analysis has shown that political commitment and relatively strong implementation capacities, especially in Rwanda, have allowed part of the growth-generated resources (along with substantial donor funding) to be invested in the provision of infrastructure and basic services, notably health care coverage and education. These achievements may, however, conceal a more fundamental problem: that economic growth in Laos and Rwanda has so far failed to create adequate linkages to the larger workforce through decent and productive employment and cannot provide sufficient alternatives to the increasingly vulnerable livelihoods it has helped produce. As a result, safeguarding access of poor households to means of production, most importantly land, remains key.

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Paper II: Measuring non-monetary poverty in the coffee heartlands of Laos and Rwanda: comparing MPI and EDI frameworks

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Measuring non-monetary poverty in the coffee heartlands of Laos and Rwanda: comparing MPI and EDI frameworks

Poverty reduction is a key objective of development interventions. Evaluating the effectiveness of policies and programmes thus requires practical, reliable and context-relevant measures of poverty. This article is the first to compare the newly presented Extreme Deprivation Index (EDI) framework with the increasingly used global Multidimensional Poverty Index (MPI) framework. Locally adapted versions of both non-monetary poverty measures were calculated for each household using an original survey in Rwanda's main coffee-producing region (a high deprivation context) and another in Laos' main coffee-producing region (a relatively low deprivation context). We highlight the crucial role of rural labour markets for many of the poorest and discuss the implications of our findings for policy design and evaluation. We find that, despite limited overlap, in both contexts each index identifies households that are consistently worse off on multiple key markers of poverty and can therefore be considered valid measures. In addition, our analysis shows that known key markers of poverty can predict adjusted global MPI status better than EDI status in Laos, whereas the EDI framework performs best in Rwanda. We conclude that the EDI framework provides a quick and reliable way to identify households with very low standards of living in high deprivation contexts. It is particularly useful for programmes with limited resources operating in comparatively poor rural settings.

Keywords: multidimensional poverty; poverty measures; evaluation; rural labour markets; Laos; Rwanda

Introduction

The way poverty is defined and measured matters for development effectiveness: conceptual understandings of poverty and the empirical evidence produced by applying corresponding measures shape explanations and inform policy choices (Laderchi, Saith, and Stewart 2003). It therefore has important real-life implications, not least in mediating access to benefits for certain groups of people. Traditionally, monetary measures such as income and expenditure have dominated, and much has been said about their merits and pitfalls (Alkire and Foster 2011a; Howe et al. 2012; Reddy and Pogge 2010). Given the widely shared assumption that poverty is a multidimensional phenomenon, however, ever more non-monetary measures have been added to the discussion, from asset indices (see Deon Filmer and Kinnon Scott 2012; Ngo and Christiaensen 2019) to subjective measures of well-being (see Dolan, Peasgood, and White 2008; Lačný 2020). Their explicit goal is often to measure livelihood outcomes directly; yet, while research tends to focus on the comparison between the monetary and non-monetary poverty measures (e.g. Bader et al. 2016; Suppa 2018; Klasen and Villalobos 2020), there is a lack of comparative research among non-monetary poverty measures. This paper addresses that gap while following the useful precedent set by these studies in applying both measures to the same sample of households, identifying overlap and mismatch and comparing each measure against key variables. It differs in its focus on rural poverty, insistence on the importance of production and labour market variables and systematic assessment of implications for programme design.

This study thus contributes at three levels: methodologically, by advancing the discussion on measuring non-monetary poverty; empirically, by highlighting key markers of poverty in Laos and Rwanda; and practically to discussions on development effectiveness by deriving implications for policy and programme design and evaluation.

At the methodological level, we fill a research gap by comparing locally adapted versions of two recent non-monetary poverty measures: the global Multidimensional Poverty Index (MPI, see Alkire and Santos 2014) and the Extreme Deprivation Index (EDI, see Sender, Cramer, and Oya 2018). Both result in binary variables at household level though with different purposes. The global MPI directly measures deprivation among multiple dimensions of poverty. To do this, it requires data on all indicators for each household and is thus especially resource intensive. The EDI uses only a single dimension (private consumption goods) and serves as a proxy for low standards of living, requiring much less data while overcoming many of the measurement problems associated with income poverty. In theory, it could thus serve as an alternative for programme design and evaluation in situations where a full MPI assessment is not possible.

This is the first time that both frameworks have been applied to the same sample, allowing a direct comparison of the resulting categorisations. To validate our findings, we do this for two separate surveys, one in a high deprivation context (in Rwanda) and one in a relatively low deprivation context (in Laos).[1] Empirically, this article sheds light on the people left behind, using the MPI and EDI frameworks as tools to examine the poverty profiles of two key agricultural export regions. We also describe key markers of deprivation and highlight the under-researched role of rural labour markets (Oya 2013). This is particularly relevant in terms of policy effectiveness as agricultural growth is said to reduce poverty in developing countries more than growth in any other sector (de Janvry and Sadoulet 2010; Ivanic and Martin 2018).

The article proceeds as follows. After introducing the research sites, sampling and data collection methods, we discuss the measurement of non-monetary poverty using the MPI and EDI methodologies. As a first step, the design and results of each locally adjusted index are presented separately, allowing us in a second step to compare the two frameworks and to highlight the merits and pitfalls of each. The following section describes poverty at our research sites by examining the relationship between the EDI and MPI frameworks and what are widely believed to be key markers of poverty, with a focus on production and employment. The last section on development effectiveness then elaborates the implications of our findings for policy and programme design and evaluation before we conclude by synthesising our findings and outlining avenues for future research.

Research sites and data collection

The coffee heartlands of Laos and Rwanda

Laos and Rwanda are both classified as Least Developed Countries (LDCs) by the United Nations Conference on Trade and Development (UNCTAD 2020). Yet, both have recorded rapid and sustained growth over the last two decades, averaging annual GDP per capita growth of 5.41% in Laos and 4.59% in Rwanda between 1999 and 2019 (World Bank 2021). Coffee has been an important part of this success. Both countries export well over 90% of their coffee (Epprecht, Weber, et al. 2018; MINAGRI, 2019). In Laos, coffee accounts for about 14% of agricultural export value (World Bank 2018a). The respective share is 15% in Rwanda, where coffee is the second most important agricultural export product after tea (MINAGRI, 2019).

Our analysis was conducted in the coffee heartlands of both countries. In Laos, 96% of coffee-producing households are in the South and over 80% of the total coffee production area is located on the rich volcanic soils of the Bolaven Plateau that spreads across Champasack, Salavan and Xekong provinces (Epprecht, Weber, et al. 2018). In Rwanda, Nyamasheke district has the highest share of coffee-producing households (NISR, 2012) as well as the highest number of coffee trees nationally (Migambi 2014). The Lake Kivu shore, part of which is located in Nyamasheke district, is particularly noted for its good environmental conditions for coffee production (Nzeyimana, Hartemink, and Geissen 2014).

Sampling

We used a multi-stage sampling procedure based on a combination of purposive and probability sampling in both countries. We started by identifying the main coffee-producing areas discussed above. In Laos, we purposely sampled six villages to have some with and without road access, with and without large-scale concession areas, as well as to include different ethnic groups and administrative districts. In Rwanda, four sectors of Nyamasheke were purposely chosen to include main coffee-producing areas as well as some for which detailed secondary data were available.[2] We then selected two villages per sector based on systematic random sampling, resulting in eight villages. In both countries, we also used systematic random sampling to sample households for the survey based on household lists provided by local authorities. To ensure a comparative set-up in both countries, the total number of households in the sampled villages (1873 in Laos and 1038 in Rwanda) serves as the reference population for statistical inference and all estimations account for complex survey design. Despite all villages being in the coffee heartlands, the number of coffee growers varies considerably between villages.[3] Since we are interested in the general dynamics in the coffee export regions (involving linkages beyond individual growers, especially wage work), we included all households in the sampling roster, regardless of whether or not they grow coffee.

Data collection

We conducted a multi-day enumerator training in each country. It was crucial not only to acquaint the team with the survey and the handling of the data collection tablets – but also to discuss the local relevance and meaning of key concepts and adapt the questionnaire accordingly. A further focus was on probing, particularly with regard to household members and economic activities. Given the importance of rural labour markets to understanding rural poverty and the underreporting of casual wage labour especially (Oya 2013), we made sure to collect data on all economic activities during the last 12 months, including those paid in kind (Oya 2015). We further included questions on land rentals and sharecropping, which are important in Rwanda. While the survey was adapted to each country's local context, the overall structure and key questions remained the same. Concretely, we asked the same MPI indicator questions in Laos and Rwanda.

The Lao survey was implemented between late March and early May 2018 and the Rwanda survey between October and November of the same year. Data was collected with hand-held tablets. Live monitoring and regular team briefings ensured that emerging issues could be addressed immediately. Data collection was followed by a thorough data cleaning process in both countries. In addition to the survey, we also conducted several months of in-depth qualitative fieldwork in each country. While our qualitative data is not the focus of the present article, it contextualises our findings and informs our interpretation.

Measuring non-monetary poverty with the MPI and EDI frameworks

Multidimensional poverty

MPI design

The 'Multidimensional Poverty Index' (MPI) proposed by Alkire and Santos (2014) marks an important advancement in the measurement of non-monetary poverty. By applying the Alkire-Foster methodology (Alkire and Foster 2011b), it provides a flexible framework for including different forms of deprivation, adjustable weights and cut-off points, while satisfying a range of important axioms. It can be adapted to

local contexts, but its global version also allows for cross-country comparisons and is continuously updated. The MPI is thus an important complement to monetary poverty measures and adds crucial information for policymakers that was hitherto overlooked (see below).

The global MPI is an aggregate measure of poverty consisting of three dimensions (health, education and standard of living), each weighted ⅓, and comprising various indicators based on household achievements that are weighted equally within each dimension (see table A1). For each indicator, a deprivation cut-off point is defined: if the cut-off is not met, a person is marked as deprived in that indicator (in practice, deprivations refer to households as 'the MPI uses any available information on all members of each household in order to identify all household members as poor or not' (Alkire and Santos 2014, 253). The weighted proportion of deprivations for each person is called a deprivation score. The poverty cut-off (k-value) then is 'the proportion of weighted deprivations a person needs to experience in order to be considered multidimensionally poor' (Alkire and Santos 2014, 253). For the global MPI, k=33.33%: i.e. a person needs to be deprived in at least a third of the indicators to be considered multidimensionally poor. The share of people that are MPI-poor is called H, the headcount ratio or incidence of multidimensional poverty. The intensity of poverty, measured by A, is defined as the average deprivation score of the multidimensionally poor, i.e. the average share of indicators in which a multidimensionally poor person is simultaneously deprived. The multidimensional poverty index is the product of H and A, i.e. MPI=H x A. Arguably more interesting are the individual deprivation headcounts and the intensity of poverty (A). The uncensored or raw headcount ratio simply refers to the share, out of all people, of deprived people in that indicator. The censored headcount ratio, on the other hand, refers to the proportion of people, out of all people, who are MPI-poor and at the same time deprived in that indicator.

In addition to the global MPI, the MPI framework also proposes a destitution measure to identify the poorest of the poor (Alkire, Conconi, and Seth 2014). The structure is the same but the individual deprivation cut-off (z) for some of the indicators are adjusted. As a result, 'the destitute are all MPI poor but also experience a more extreme level of deprivation for some indicators' (Alkire, Kanagaratnam, and Suppa 2020, 9). Given the higher level of deprivation in Rwanda (the adjusted global MPI identifies 81% of households as poor in our sample), the destitution measure is more appropriate for this context. We therefore calculate an (adjusted) destitution measure for Rwanda and an (adjusted) global MPI for Laos. In both cases, we stuck as closely to the most recent version of the global MPI and the destitution measure respectively (Alkire, Kanagaratnam, and Suppa 2020) as was possible with the FATE surveys. There are, however, four main differences which are explained in appendix A.

MPI results

Having laid out the design and calculation of the different MPI measures, this section contextualises the results. We compare FATE data with rural or local averages in both countries. These were calculated by running adapted versions (to mirror the adjusted MPI design used here) of the do-files provided by OPHI on the DHS (Demographic and Health Surveys), respectively MICS (Multiple Indicator Cluster Surveys) data. The results are presented in tables 1 and 2. It emerges clearly that the sampled villages in Laos are consistently and considerably better off than the national rural average. This is due to the Bolaven Plateau's relative wealth: the percentage of the population living below the poverty line is 17.89 on the Plateau as compared to 28.41 at the national level (including urban areas that typically have low poverty rates), according to the Population and Housing Census of 2015 (the results are presented in Epprecht, Nicholas, et al. 2018; parts of the data can be found at http://www.decide.la/en/).

Unfortunately, calculating the adjusted global MPI using MICS data for the Bolaven Plateau was not possible, as the Plateau spans a number of provinces, covering only a small part of each, and has unique characteristics that render provincial averages meaningless. We instead verified the reliability of

our findings at village level by referring to similar indicators collected by the Census (see footnote 4 in appendix A).

The Rwandan sample lies fully within Nyamasheke district – the district with the highest monetary poverty rate of Rwanda (NISR, 2018a) – so the FATE data can be substantiated by looking at the DHS data for Nyamasheke district, where all households were classified as rural. Most of our own findings correspond very well to the DHS data. The only statistically significant differences in the raw headcounts are on the food and sanitation indicators, but we have strong reasons to believe that the FATE data are valid. We show in appendix A that the food and nutrition situation in our sample is much more dire than indicated by DHS data. Given the absence of child mortality data, the food indicator in Rwanda counts as an entire dimension and strongly drives the adjusted destitution measure, explaining the stark differences to the DHS data in the MPI and H. Regarding sanitation, it is important to note that households are often required by local authorities to improve their sanitation facilities. EICV5 data for rural Nyamasheke show that 10.52% of households use unimproved sanitation or improved sanitation that is shared with other households (NISR, 2018b). This corroborates our findings.

Table 1: Comparison of multidimensional poverty measures in Laos (population estimates based on sub-samples with complete MPI information)

			Adjusted global MPI for rural areas: k=33%	Adjusted global MPI: k=33%	Mean difference and standard error of difference (in %)
			MICS data n=15,126	FATE survey n=527	
MPI			0.125 (0.006)	0.068 (0.007)	0.057 (0.009*)
Share of households that are MPI-poor (in %)			22.84 (0.85)	14.99 (1.45)	7.85 (1.68*)
H (Incidence of poverty, in %)			25.42 (1.00)	14.23 (1.45)	11.19 (1.76*)
A (Intensity of poverty, in %)			49.15 (0.41)	47.73 (1.01)	1.42 (1.09)
Dimensions & Indicators			**Headcount (in %)**	**Headcount (in %)**	
Health	Food/Nutrition	rawH	25.18 (0.66)	25.15 (1.85)	0.03 (1.96)
		censH	14.24 (0.60)	11.10 (1.31)	3.14 (1.44*)
	Child mortality	rawH	3.36 (0.20)	2.49 (0.64)	0.87 (0.67)
		censH	2.37 (0.18)	1.62 (0.55)	0.75 (0.58)
Education	Years of schooling	rawH	31.11 (0.89)	19.51 (1.59)	11.60 (1.82*)
		censH	19.78 (0.87)	11.39 (1.33)	8.39 (1.59*)
	School attendance	rawH	15.42 (0.74)	12.18 (1.42)	3.24 (1.61*)
		censH	11.44 (0.72)	6.13 (1.00)	5.31 (1.23*)
Standard of living	Cooking fuel	rawH	97.65 (0.18)	88.48 (1.26)	9.17 (1.28*)
		censH	25.21 (0.99)	13.24 (1.40)	11.96 (1.71*)
	Sanitation	rawH	37.76 (1.12)	37.23 (1.91)	0.54 (2.22)
		censH	19.44 (0.99)	10.31 (1.25)	9.12 (1.59*)
	Electricity	rawH	9.87 (0.86)	0.97 (0.34)	8.91 (0.92*)
		censH	8.35 (0.79)	0.55 (0.25)	7.80 (0.83*)
	Flooring	rawH	9.04 (0.65)	0.87 (0.35)	8.17 (0.74*)
		censH	5.61 (0.49)	0.32 (0.20)	5.29 (0.53*)
	Assets	rawH	12.20 (0.62)	2.12 (0.56)	10.08 (0.84*)
		censH	9.23 (0.58)	1.90 (0.56)	7.33 (0.81*)

Notes: Standard errors are in parentheses
             *p<.05 (corrected for survey design)

Table 2: Comparison of multidimensional poverty measures in Rwanda (population estimates based on sub-samples with complete MPI information)

			Adjusted destitution measure for Nyamasheke (all rural): k=33%	Adjusted destitution measure: k=33%	Mean difference and standard error of difference (in %)
			DHS data n=360	FATE survey n=198	
MPI			0.069 (0.012)	0.251 (0.019)	-0.182 (0.023*)
Share of households that are MPI-poor (in %)			19.18 (2.31)	45.15 (3.08)	-25.97 (3.85*)
H (Incidence of poverty, in %)			16.48 (2.68)	45.38 (3.43)	-28.90 (4.36*)
A (Intensity of poverty, in %)			41.96 (1.44)	55.27 (0.97)	-13.31 (1.74*)
Dimensions & Indicators			**Headcount (in %)**	**Headcount (in %)**	
Health	Food/Nutrition	rawH	4.79 (1.43)	41.66 (3.44)	-36.87 (3.73*)
		censH	4.79 (1.43)	41.66 (3.44)	-36.87 (3.73*)
Education	Years of schooling	rawH	1.84 (0.59)	3.78 (1.11)	-1.94 (1.26)
		censH	1.84 (0.59)	3.78 (1.11)	-1.94 (1.26)
	School attendance	rawH	1.98 (0.51)	2.17 (0.99)	-0.19 (1.11)
		censH	1.98 (0.51)	2.17 (0.99)	-0.19 (1.11)
Standard of living	Cooking fuel	rawH	99.60 (0.19)	98.01 (0.93)	1.59 (0.95)
		censH	16.48 (2.68)	44.54 (3.42)	-28.06 (4.34*)
	Sanitation	rawH	28.67 (3.23)	9.13 (1.92)	19.55 (3.76*)
		censH	10.30 (2.02)	7.04 (1.79)	3.26 (2.70)
	Electricity	rawH	78.94 (6.13)	76.41 (2.56)	2.53 (6.65)
		censH	15.98 (2.63)	38.54 (3.27)	-22.56 (4.20*)
	Flooring	rawH	87.20 (2.63)	88.99 (2.02)	-1.79 (3.32)
		censH	16.36 (2.65)	43.05 (3.41)	-26.69 (4.32*)
	Assets	rawH	28.10 (2.10)	32.15 (3.12)	-4.04 (3.76)
		censH	11.13 (1.92)	19.95 (2.69)	-8.82 (3.31*)

Notes: Standard errors are in parentheses
            *p<.05 (corrected for survey design)

'Extreme' deprivation

EDI design

In an effort to simplify the measurement of poverty and its interpretation for policy and programme evaluation, Sender et al. (2018) propose what they call the 'Extreme Deprivation Index' or EDI. The EDI works at the household level and is based on ownership of '*the most basic of non-food wage goods*, a very small bundle of consumer goods each of which can make a huge difference to rural life' (Sender, Cramer, and Oya 2018, 2, italics in original). A cut-off point for the resulting distribution is chosen arbitrarily to define, for example, the bottom quintile as deprived. Sender et al. (2018, 2) argue that the index captures extreme deprivation and 'allows a quick, reliable and cost-effective way of identifying people who have extremely low standards of living and of assessing the impact of policy interventions'.

      Goods are selected based on local consumption patterns and the EDI is therefore always context-specific. The number of items included is not pre-determined and might depend on the data available. A careful selection is arguably more important than the number of items.[4] Two considerations stand out in particular. First, goods included should be private consumer/wage goods. The EDI's focus on consumer goods is welcome as it is conceptually clear and simple to interpret.[5] It is thus more specific than many asset indices that often lump together a variety of very different items than can lend themselves to misleading results unless clearly specified (see the discussion in Johnston and Abreu 2016). Consumer goods exclude not only non-tangible 'assets' such as education but also capital (so-called producer or investment) goods or inputs such as land and goods that might be directly linked to income-earning activities. Means of transport are often borderline cases: while 'tok-toks' in Laos are to be understood as producer goods as is often the case with bicycles in Rwanda, which are frequently used by transportation cooperatives, the classification is sometimes less clear for other vehicles (e.g. cars) or in other contexts. It is thus preferable to exclude means of transport altogether. Additionally, EDI goods should be based on private consumption and function independently of public service provision. This means that publicly provided goods (often related to sanitation or health) or goods that are mandatory by law or required by authorities (such as shoes in Rwanda) should be excluded. Similarly, goods that depend heavily on access to electricity such as TVs should be excluded unless, as is the case in our Laos site, access to electricity is so widespread (99% of households) that we can presume the goods can be used reliably.[6] Mobile phones, on the other hand, do not need to be permanently plugged in and can be used rather reliably in households without electricity (using for example plugs in shops or bars to occasionally recharge). Items selected for the index should also be more or less independent from one another; it follows that they should not be substitutes of one another which would make interpretation difficult (e.g. are households too poor to afford a basic mobile phone or do they not have one because they already have a smartphone?).[7] Given that housing conditions are often a strong marker of differentiation, slow to change, tangible and easy to enumerate, relatively independent of public provision and other consumer goods and usually closer in character to private consumption than investment goods, we also added an indicator of context-specific housing conditions in the EDI, treating them as wage-good equivalents.[8]

      The second consideration is that the included consumer goods should be considered basic necessities and have a high income elasticity of demand – reflected in relatively widespread ownership. Preferably, these are durable consumer goods, reflecting longer term accumulation and use independent of seasonal variations. Additionally, they should be seen as meaningful and important in the context, i.e. as making a difference to the quality of life of people in our sample, which is evident in the case of a cooking pot, for example. 'Luxury' goods such as computers, often included in national surveys but with little relevance for the understanding of poverty in rural areas, are less important. We only included goods that were owned by at least 10% and not more than 90% of households in our sample.[9] It is helpful to have

some variation in ownership, with some goods owned by most households and some that only a minority of households have access to. The overall distribution of goods owned (see figures B1 and B2 in appendix B) should similarly span from households that own none of the selected goods and to households that own all of them. This shows that the index picks up differentiation and is realistic in that it is also not uncommon to own all items.

EDI results

Tables 3 and 4 show the selected items and proportion of households owning them for each of our samples and compared to other data sets. For Laos, this systematically highlights the wealth of the Bolaven Plateau relative to other rural areas in general as measured by the MICS data (Lao Statistics Bureau 2018). In a context of lower deprivation, the character of goods selected based on local consumption patterns changes. Of course, a TV might not be understood as a 'basic' necessity and as such the EDI in Laos might not measure *'extreme'* deprivation. Its application as a way to identify deprived households in relative terms based on non-food wage groups remains valid nevertheless.

Table 3: Proportion of households in Laos owning consumer goods included in the Laos EDI (population estimates based on sub-sample with complete EDI information: n=707)

Consumer goods Laos	Proportion of households owning it (in %) Source: FATE survey (2018)	Proportion of households owning it (in %) Source: Average for rural areas based on MICS data (2017)	Mean difference and standard error of difference (in %)
Washing machine	18.09 (1.18)	13.49 (0.58)	4.60 (1.32*)
Speaker	47.05 (1.57)	Not available	NA
Fridge	68.14 (1.49)	53.59 (1.05)	14.55 (1.82*)
Improved walls[1]	87.44 (1.01)	Answer code not comparable	NA
Television set	88.08 (1.02)	72.21 (0.92)	15.86 (1.37*)
Any type of mobile phone	88.37 (1.05)	86.57 (0.54)	1.80 (1.18)

Notes: Standard errors are in parentheses
              *p<.05 (corrected for survey design)
              [1] Made of wood, concrete, sheet metal or adobe

Table 4: Proportion of households in Rwanda owning consumer goods included in the Rwanda EDI (population estimates based on sub-sample with complete EDI information: n=230)

Consumer goods Rwanda	Proportion of households owning it (in %) Source: FATE survey (2018)	Proportion of households owning it (in %) Source: Average for rural Nyamasheke based on EICV5 data (2018) unless otherwise indicated	Mean difference and standard error of difference (in %)
Improved floors[1]	12.58 (1.86)	15.06 (2.26)	-2.48 (2.93)
Radio	35.48 (2.77)	40.24 (2.77)	-4.76 (3.91)
Any type of mobile phone	50.77 (2.83)	70.05 (2.67)	-19.28 (3.89*)
Torch	58.64 (2.83)	11 [Erlebach, 2006]	NA
Metal or wooden bed	59.78 (2.73)	83.58 (2.02)	-23.80 (3.40*)
Table	64.04 (2.67)	74.60 (2.19)	-10.56 (3.46*)
Blanket	82.06 (2.22)	76 [Erlebach, 2006]	NA
Metal cooking pot	84.17 (2.06)	79 [Erlebach, 2006]	NA
Plastic basin	87.75 (1.91)	68 [Erlebach, 2006]	NA
Panga (machete)	89.36 (1.77)	89.88 (1.62)	-0.52 (2.40)

Notes: Standard errors are in parentheses
                *$p<.05$ (corrected for survey design)
                [1] Made of wood, vinyl, ceramic or cement

In Rwanda, the EDI can be interpreted as measuring extreme deprivation, given the basic character of the goods selected, and largely corresponds to its use by Sender et al. (2018). As some of these necessities are unfortunately not covered in standard surveys, we have to compare the FATE data with different sources in the literature. For some goods, we could not find any recent data from rural areas but we can draw a more or less direct comparison from the results provided by Erlebach (2006), which were collected in 2002 in an area close to our own research sites, showing that households in Nyamasheke were able to accumulate goods over time. Nevertheless, the comparison with recent EICV data reported in table 4 indicates that the sampled villages are consistently worse off than the Nyamasheke average. Although some indicators within the MPI framework might reflect improved government provision or pressures on households to invest in these areas, the lack of basic necessities hints at lower private consumption in these villages in line with the above-mentioned nutrition problem.

The distributions of consumer goods are given in figures B1 and B2 in appendix B. A disadvantage of the EDI is that these figures do not allow us to identify any desired proportion of respondents as deprived, but in order to compare the EDI to the MPI framework, it is meaningful to select cut-off points that identify similar proportions of households as poor with both indices so that we compare households with the same relative poverty for each index.

To identify the bottom end of the distribution, households owning none, one or two of the selected goods in Laos are classified as deprived, i.e. 13.86% of households for which we have both MPI and EDI

information. In Rwanda, applying a cut-off point of six consumer goods identifies 49.70% of these households as deprived.

Comparing EDI and MPI frameworks

The EDI and MPI frameworks both measure some form of non-monetary deprivation. Table 5 summarises some of the key similarities and differences between the two. Unlike monetary measures, MPI and EDI measures result in binary variables at the household level and therefore cannot be directly used to provide household rankings. At the same time, they have the benefit of requiring less recall from respondents than many monetary measures and of most indicators being relatively little affected by seasonal fluctuations. There are, however, key differences between the MPI and EDI frameworks.

MPIs have stronger normative meaning, most notably by measuring livelihood outcomes directly, and is more comprehensive as it includes multiple forms of deprivation. This is at the same time its advantage and limitation. The choice of indicators is often driven by data availability but has been criticised for excluding 'fundamentally important determinants of the standard of living of rural children and adults' such as working conditions or exposure to teenage pregnancy (Cramer, Sender, and Oqubay 2020, 206). Moreover, the need for a single composite index has been questioned as the MPI is frequently disaggregated again for policy purposes, leading some to prefer a dashboard approach showing multiple single indices instead (Ravallion 2011). Additionally, MPI measurement is not only very resource intensive and has higher data requirements but it also includes more cut-off points and weighting problems, which all introduce their own arbitrariness and problems for policymaking (Ravallion 2012). On the upside, this is precisely what makes the index so flexible as it can be adjusted for different purposes and to different data constraints. Its complexity also allows for more nuanced analyses that can inform policy-making, for example, by aggregating it to the (sub-)population level (see below).

The EDI framework, on the other hand, does not attempt to portray the experience of poverty or reflect its multidimensional character. It simply claims to identify 'people who have extremely low standards of living' (Sender, Cramer, and Oya 2018, 2) and as thus it is argued that it works as a good proxy to identify other markers of poverty. The EDIs' primary use is the identification of relative deprivation, i.e. the lowest end of the distribution. It requires much less complex data (we could calculate it for over 98% of both samples) and sometimes ownership can even be confirmed visually by enumerators. Another advantage of the EDI framework is that it excludes goods that are either provided or required by government authorities, thus giving a clearer picture of differentiation among the poor. Its primary downside is that it remains a proxy and does not measure livelihood outcomes directly. While the components in the EDIs are tangible goods and the indicators in the global MPI are 'objective' measures, both indices can be adapted to reflect community priorities. In the MPI framework, 'subjective' well-being indicators can also be used as we do for the food and nutrition dimension.

EDIs have to be constructed based on local consumption patterns but since they only directly measures one dimension (private consumption) and we are interested in the bottom end of the distribution, they can be used for cross-country comparisons. Moreover, the global MPI, using the exact same indicators and weighting across countries, has been explicitly designed for international comparison. Our priority, however, has been to construct two locally appropriate EDI and MPI versions in one high and one low deprivation context and thus the focus is on the comparison between the two indices in one country (the following statistical analysis therefore refers to the locally adjusted versions laid out above).[10] Widespread deprivation in Nyamasheke required the use of an adjusted MPI destitution measure, rendering cross-country results incomparable.[11] In each country, we have instead identified similar proportions of households as deprived by both indices.

Table 5: Comparison of MPI and EDI frameworks

MPI framework	EDI framework
Non-monetary poverty: multidimensional deprivation	Non-monetary poverty: private consumption goods only
Claims to measure acute poverty directly by a shortfall in basic needs/functionings	Claims to be a good proxy for extremely low standards of living, including deprivations in education, nutrition, and limited access to decent jobs
Binary indicator can be calculated at the household level, cannot reflect intra-household inequality	Binary indicator can be calculated at the household level, cannot reflect intra-household inequality
Cut-offs changeable (deprivation and poverty cut-offs respectively)	Cut-off changeable (one cut-off only)
Decomposable into indicators and aggregated at population level	Can neither be decomposed nor aggregated
Each dimension has equal weight, but indicator weights vary	Consumer goods have equal weights within a country
High data requirements that necessitate complex survey design and index construction	Low data requirements for which simple survey design and index construction are sufficient
Some data are hard to verify by enumerators	Data easily verifiable by enumerators
Can be context-specific but does not need to be	Must be context-specific
Mixes stock and flow variables	Stock variables only

The Venn diagrams in figures B3 and B4 in appendix B illustrate that about 82% of households in Laos and 67% of households in Rwanda for which we have both EDI and MPI data are categorised the same with both indices. However, among households classified as deprived by either index, there is only limited overlap: in Laos only 36% of the MPI-poor are also EDI-poor while in Rwanda it is 68% (percentages are similar when taking EDI-poverty as reference point). We ran a number of tests to see if either EDI-poor only or MPI-poor only are significantly different from each other on any variables of interest, i.e. whether applying either one of the indices systematically excludes some groups of people.[12] In Rwanda, this was not the case and when comparing EDI-poor only and MPI-poor only respectively to the poorest of the poor (those households that were simultaneously EDI- and MPI-poor), we found only one significant difference (number of female-headed households) between the EDI-poor only and the poorest of the poor, while the MPI-poor only were also significantly better-off than the poorest of the poor on some education variables. This suggests that the EDI is slightly better at identifying households with the lowest standards of living on our variables of interest than the adjusted destitution measure in Rwanda. In Laos, the reverse is true: for example, the EDI-poor-only had significantly more adults with secondary education and more land than the poorest of the poor whereas there were no significant differences between the MPI-poor only and the poorest of the poor on any of our variables of interest. Unsurprisingly, EDI-poor only and MPI-poor only were also significantly different from each other on several variables of interest. This indicates that the Laos EDI, given the goods included, counts some better-off households as poor and that the MPI might be the preferred measure in this context. The EDI framework may be more appropriate in poorer rural settings such as in Rwanda because basic necessities can be readily used to differentiate households and might be more telling than, for example, services based on public provision

included in the MPI framework, whereas in contexts such as Laos these necessities are owned by most households, requiring the inclusion of more 'luxurious' goods. However, more research with larger samples is needed to say anything definite about the different groups of poor households identified by only one of the two indices. What is crucial is how the poor identified by each of the indices (whether also classified as such by the other or not) compare on key markers of poverty and if overall they show different pictures of poverty.

Describing poverty in Laos and Rwanda

This section examines how the poor, defined by the MPI and EDI frameworks and comprising similar proportions of households, differ in relation to the non-poor on a number of variables of interest. In doing so, we shine light on the profile of households left behind in the coffee heartlands of Laos and Rwanda and the role of rural labour markets in shaping material well-being. The selection of our variables of interest is guided by two principles. First, we include some variables that were found in the literature to be key markers of poverty and are behind so-called 'stylised facts' (see the discussion in Cramer et al. 2020). If our indices are to be useful, we would expect them to detect important differences for these variables. Many of these variables were also used by Sender et al. (2018) to justify use of the EDI framework and applying them allows these authors' findings to be tested in different countries for the first time. Second, we argue that the way households are positioned in production and labour markets is key to the understanding and alleviation of poverty with implications for policy and programme design. That is, we also include key variables of production and employment that are often neglected in poverty analysis.

Education and nutrition

Level of education, especially of women, is an uncontroversial marker of poverty: 'A low level of female educational attainment is widely and correctly viewed as a particularly useful marker of poverty and of the adverse longer-term consequences of deprivation in Africa, because a woman's lack of education is likely to be transmitted inter-generationally, negatively affecting the health, productivity, and lifetime earnings of her children' (Cramer, Sender, and Oqubay 2020, 215). Similar observations, notably in relation to child nutrition, have been made in the Southeast Asian context (Bühler, Hartje, and Grote 2018).

Table 6: Education and nutrition indicators according to MPI and EDI measures (population estimates based on sub-sample with complete MPI and EDI information)

Variables of interest	MPI measures			EDI measures		
	NP	P	D	NP	P	D
Households contain member that completed secondary school (in %)						
Laos	61.95	5.17	-56.79** (2.96)	57.08	31.68	-25.41** (5.47)
Rwanda	22.88	15.23	-7.66 (5.12)	26.82	11.80	-15.02** (5.04)
Households contain adult female that attended secondary school (in %)						
Laos	54.48	5.14	-49.33** (2.82)	50.03	28.33	-21.70** (5.33)
Rwanda	23.28	13.63	-9.65 (4.96)	25.00	12.59	-12.41* (5.03)
Average share of illiterate adults in households						
Laos	0.22	0.49	0.28** (0.04)	0.23	0.43	0.20** (0.04)
Rwanda	0.34	0.49	0.16** (0.05)	0.28	0.54	0.26** (0.05)
Average share of illiterate adults in households (<30 years old)						
Laos	0.07	0.45	0.38** (0.06)	0.11	0.23	0.13* (0.05)
Rwanda	0.09	0.25	0.16** (0.06)	0.10	0.23	0.13* (0.06)
Households deprived in respective MPI nutrition indicator (in %)						
Laos	15.30	75.96	60.66** (5.05)	20.93	45.43	24.50** (5.60)
Rwanda	0	86.67	86.67** (3.22)	24.28	54.16	29.88** (5.96)
Either household head consumed meat, poultry or fish the previous day or night (in %)						
Laos	93.36	89.29	-4.07 (2.95)	93.66	87.17	-6.49 (3.34)
Rwanda	24.75	9.48	-15.27** (4.62)	26.27	9.51	-16.75** (4.81)

Notes: NP: Among non MPI-/EDI-poor respectively
P: Among MPI-/EDI-poor respectively
D: Difference between P and NP
*p<.05, **p<.01 (corrected for survey design, standard errors in parentheses)

Table 6 shows education indicators proposed by Sender et al. (2018) and how they relate to the EDIs and MPIs of our samples. The EDI-poor are significantly worse off than the non-poor for all educational indicators in both countries. The MPIs provide the same picture but are not able to register significant differences regarding secondary education in Rwanda.

Another key characteristic of poverty is food insecurity and inadequate nutrition; large-scale studies found that both are concentrated among poor households in Rwanda (WFP 2018) and Laos (Lao Statistics Bureau 2016). This is reflected in our measures: there is, by design, a strong relationship between multidimensional poverty and the indicator for nutritional deprivation used in the adjusted global MPI and destitution measure respectively. Crucially though, this dynamic is also picked up by the EDIs in both countries. Further research on the EDI framework should collect anthropometric data. EDI- and MPI-poor in Rwanda are also much less likely to have consumed meat or fish on the previous day, underlining that nutrition is an important marker of differentiation in a high deprivation context.

Household composition and housing

The relationship between household size and poverty is more controversial (White 2002) and does not seem to be an important marker of differentiation at our research sites. As for household composition, female-headed-only households are often found to be in particularly vulnerable positions (although this relationship is not straightforward either, see Chant 2004). This category is less pertinent in Laos where it only accounts for about 9% of households. In Rwanda, in contrast, around 32% of households in our sample are female-headed-only, partially as a consequence of the 1994 genocide.[13] Despite advances on gender equality, female-headed households in Rwanda are more likely to be poor (Carter 2018). Both indicators support this finding. The widespread use of categorising households according to headship has, however, been criticised. Sender et al. (2018) argue that it is more telling to look at the gender distribution of adults in a household. They find that households lacking access to adult male labour or counting more than 75% of women among all adults (said to be 'female-dominated') are more deprived. Indeed, there are more female-dominated households among the EDI- and MPI-poor households in our sample, and again, differences in Rwanda are statistically significant. The picture is the same for whether a household contains adult males.

In Laos, ethnicity has long been strongly associated with patterns of poverty, with the majority group of the Lao-Tai being considerably better off than other ethnic groups (Bader et al. 2016; World Bank 2017). A dummy variable for belonging to the Lao-Tai group shows significant differences in EDI and MPI deprivation, validating once more the two measures. In Rwanda, discussion of ethnic identifiers has been banned following the 1994 genocide (Huggins 2017), and we therefore did not gather any data on it – suffice to note that it seems to interlink with other socio-economic factors in complex ways (Dawson 2018).

Lastly, table 7 shows that even the EDIs reveal significant differences on the MPI sanitation indicator in both countries, highlighting again that housing characteristics are an important marker of differentiation.

Table 7: Household composition and housing indicators according to MPI and EDI measures (population estimates based on sub-sample with complete MPI and EDI information)

Variables of interest	MPI measures			EDI measures		
	NP	P	D	NP	P	D
Average household size (number of people)						
Laos	5.33	5.02	-0.31 (0.20)	5.33	5.03	-0.30 (0.23)
Rwanda	4.71	4.75	0.04 (0.28)	4.93	4.53	-0.40 (0.27)
Households are female-headed-only (in %)						
Laos	10.12	4.99	-5.13* (2.58)	8.59	14.07	5.49 (4.28)
Rwanda	22.15	46.43	24.28** (6.16)	19.93	46.36	26.44** (5.90)
Households are female-dominated (>75% of adults on HH roster are female, in %)						
Laos	4.60	5.71	1.11 (2.41)	3.67	11.39	7.72* (3.64)
Rwanda	12.90	26.11	13.22* (5.14)	10.98	27.00	16.02** (5.00)
Households contain adult male (in %)						
Laos	96.63	94.29	-2.35 (2.36)	97.31	90.00	-7.31* (3.45)
Rwanda	87.22	74.19	-13.04* (5.08)	89.02	73.57	-15.45** (4.94)
Households belong to ethnic minority (in %)						
Laos	53.29	75.04	21.74** (5.13)	54.13	71.44	17.30** (5.22)
Households deprived in MPI sanitation indicator (in %)						
Laos	32.00	70.51	38.51** (5.30)	32.34	71.19	38.85** (5.13)
Rwanda	3.78	16.93	13.14** (3.98)	3.03	16.48	13.45** (3.63)

Notes: NP: Among non MPI-/EDI-poor respectively
                    P: Among MPI-/EDI-poor respectively
                    D: Difference between P and NP
                    *p<.05, **p<.01 (corrected for survey design, standard errors in parentheses)

Production and the centrality of rural labour markets

Thus far, the focus has been on ways of identifying the poor and describing key deprivations they experience. This sub-section argues that their embeddedness in production and labour relations also needs to be examined to deepen our understanding of poverty to formulate policy recommendations and improve programme design. After all, poverty is not necessarily the result of a lack of engagement with the growth process but can also be produced by adverse incorporation (Hickey and du Toit 2013; Rigg 2016). What matters are the terms of inclusion and, by extension, the role of production and especially of labour markets (Oya, McKinley, and Bargawi 2013).

Table 8 summarises the links between non-monetary poverty and production and labour market indicators. We start with land access as it is a chief concern in any agrarian setting. While it has been asserted that poverty is increasingly becoming delinked from land (Rigg 2006), this argument has less currency where employment opportunities are scarce or do not allow households to accumulate (notably in Nyamasheke), or where cash crop production remains one of the key accumulation strategies (notably on the Bolaven Plateau). Not coincidentally, therefore, we find that poor households have significantly smaller operational holdings and own less land. Nevertheless, landlessness is relatively rare in our research

settings where households usually have access to some land – even though it may only be a small plot and far too little to provide a living. In Nyamasheke, the mean operational holding of the entire sample (excluding households with no farming land) is 0.29 ha, and many households remain marginal farmers dependent on at least occasional wage employment, as captured in Bernstein's (2010) notion of 'classes of labour'. As a result, programmes with the goal to increase the productivity of smallholder farmers, especially by raising coffee yields, might not reach many of the poorest directly (the poorest face important entry barriers to coffee farming in Rwanda and as a result many do not grow coffee themselves, see Illien, Niño, and Bieri 2021). Rather, the extent to which interventions can improve the quality and quantity of wage employment is likely to make a bigger difference in the life of the poorest. On the Bolaven Plateau, despite increasing pressures on land, respective landholdings are much larger with an average of 2.84 ha. Interventions to raise the profitability of household producers, notably coffee farmers, are more likely to be relevant here. Nevertheless, the under-researched role of rather worse-off domestic migrants that come to work on the Plateau is one of several factors that put the question of wage employment back at the centre.

Table 8: Production and work indicators according to MPI and EDI measures (population estimates based on sub-sample with complete MPI and EDI information)

Variables of interest	MPI measures			EDI measures		
	NP	P	D	NP	P	D
Average area of owned land (in ha)						
Laos	3.19	1.55	-1.63** (0.15)	3.08	2.07	-1.01** (0.21)
Rwanda	0.37	0.19	-0.19 (0.11)	0.45	0.13	-0.31** (0.11)
Average area of agricultural operational holding (in ha)						
Laos	2.88	1.39	-1.49** (0.15)	2.79	1.85	-0.94** (0.21)
Rwanda	0.34	0.14	-0.20* (0.09)	0.41	0.09	-0.32** (0.09)
Households hire in labour (in %)						
Laos	50.98	23.97	-27.01** (5.72)	52.67	12.32	-40.35** (4.62)
Rwanda	27.57	4.51	-23.05** (4.27)	27.06	7.13	-19.93** (4.62)
For households hiring out labour: households with at least one job in casual agricultural wage employment (in %)						
Laos	38.60	97.12	58.52** (4.31)	44.07	87.55	43.49** (6.97)
Rwanda	59.50	86.38	26.88** (7.37)	56.65	86.03	29.38** (7.57)
For households hiring out labour: households with at least one non-agricultural job with a written contract (in %)						
Laos	38.99	0	-38.99** (3.49)	36.18	6.28	-29.90** (5.05)
Rwanda	15.23	2.01	-13.22** (4.76)	17.08	1.84	-15.24** (5.18)
For households hiring out labour: households with at least one job paid monthly (in %)						
Laos	50.51	13.57	-36.95** (5.64)	47.29	20.35	-26.94** (7.28)
Rwanda	38.63	13.19	-25.44** (7.10)	37.13	17.00	-20.13** (7.49)
For households hiring out labour: households with at least one job involving migration (in %)						
Laos	28.52	9.21	-19.31** (4.79)	25.41	22.86	-2.55 (7.61)
Rwanda	19.62	18.79	-0.84 (6.80)	17.62	20.62	3.00 (6.77)
Households receive remittances (in %)						
Laos	10.46	1.18	-9.27** (1.65)	10.03	3.15	-6.88** (2.31)
Rwanda	4.52	6.83	2.31 (3.01)	4.92	6.22	1.31 (2.90)

Notes: NP: Among non MPI-/EDI-poor respectively
           P: Among MPI-/EDI-poor respectively
           D: Difference between P and NP
           *$p<.05$, **$p<.01$ (corrected for survey design, standard errors in parentheses)

In both regions, rural labour markets are dynamic and intertwined with social differentiation. Only a few of the poorest households are in a position to hire workers. Table 8 also shows that the type of employment can make a large difference. Poor households engage predominantly in casual agricultural wage employment that typically has the worst conditions. Non-poor households, on the other hand, have significantly more access to better-paid and more secure formal work such as non-agricultural jobs with a written contract (e.g. government jobs such as teachers) or work paid on a monthly basis. Qualitative data reveals different rationales for participating in labour markets. For the poorest, wage work is primarily a survival strategy, as many cannot secure their livelihoods on their marginal holdings. This is especially the case in Nyamasheke, where land scarcity is high. However, employment opportunities are few and

strongly seasonal, leaving poor households highly vulnerable and often critically underemployed. In addition, interview data indicate that poor households face barriers to access wage employment. These include, among others, a lack of social networks, poor health and the burden of care and domestic work for women. The combined lack of adequate land and of employment opportunities is thus a key marker of poverty. For better-off households with more land, on the other hand, wage work can open up opportunities for accumulation and reinvestment in production or higher education while own-account farming (not just subsistence farming but, crucially, also coffee production) provides a basic level of security.

In Laos, two additional elements stand out that structure labour markets in important ways. First, there has been a steep rise in land leases and concessions of state land since around 2000, covering a total of about 5% of the country's national territory, according to a conservative estimate and excluding mining exploration and hydropower projects (Schönweger et al. 2012). The impacts of these land deals have been assessed critically (Hett et al. 2020). The Bolaven Plateau itself has a high concentration of large-scale land investments (Schönweger et al. 2012) and the establishment of coffee plantations, mining projects and dams has increased pressure on land (Delang, Toro, and Charlet-Phommachanh 2013). Several of the villages in our sample have been directly affected by these developments. In focus groups and interviews, many respondents complained about negative socio-economic and environmental spillovers, ranging from dispossessions to unkept promises in village investments. In addition, it was sometimes mentioned that the companies do not provide enough local employment and are hiring workers from other areas instead (see below). Where companies do provide work, poor households are more likely to take these jobs as many seek to make a living out of a patchwork of labour days on different plantations. In Nyamasheke, on the other hand, mechanised large-scale plantations have been largely absent, not least due to the hilly terrain. Most coffee is grown by relatively small producers with low levels of mechanisation.

Second, the salience of migration and mobility has been increasing in rural Laos, prompting Cole and Rigg (2019, 173) to argue that 'while mobility has long, perhaps always, been a feature of rural life and living in Laos, today and increasingly we see mobility becoming defining of what it is to be rural'. Two dynamics are of particular importance. On the one hand, there is the labour migration of, predominantly young and often female, household members in Southern Laos to neighbouring Thailand, resulting in large inflows of remittances (Manivong, Cramb, and Newby 2014; Phouxay 2017). While these dynamics are certainly in play on the Bolaven Plateau, about 28% of households with wage employment have members migrating for work (not necessarily abroad) and a rather small number of households receiving remittances suggests that out-migration may be relatively less prominent on the Plateau where coffee production might act as a retaining factor. On the other hand, there is the internal seasonal migration which we hypothesise to be more prominent. The FATE survey shows that only about 46% of hiring households hired workers exclusively from within the same district. Discussions with concession companies, plantation workers and villages further revealed that large numbers of rice farmers from the lowlands in Southern and Central Laos are hired as seasonal labour by coffee-producing households and especially by large companies that provide some rudimentary housing. The extent of these movements, their drivers and dynamics on the Plateau have not yet been sufficiently documented and should be the subject of future research. Table 8 shows that MPI-poor households have significantly less jobs involving migration (domestic or international) which hints at the important role that remittances can play for some as is revealed by both the Laos MPI and EDI.

The Great Lakes region of Africa is also marked by massive migration movements, often linked to conflicts, and there were many respondents in our sample that returned from the Democratic Republic of the Congo after the genocide. Yet, from a snapshot perspective of the people staying in our sample villages, labour markets themselves are far more localised. While about 18% of households with wage employment have members migrating for work, over 91% of households that hired workers employed only people from Nyamasheke district and around 65% exclusively from within the same village.

This discussion has shown how many poor households engage in production relations and labour markets on different terms and for different reasons than non-poor households. Overall, EDI- and MPI-poor households struggle to survive and largely depend on combinations of often very marginal, own-account and precarious agricultural wage employment. Many are underemployed and therefore dispose of little negotiating power vis-à-vis employers. Non-poor households tend to manage by investing in production (notably through hiring labour and acquiring land) and/or education to access higher paid and more stable formal employment, usually in the non-agricultural sector.

Regression and classification analysis

Regression and classification analysis reflects these findings and underlines the differences between the EDI and MPI frameworks. Table 9 shows the results of logit regressions based on key markers of poverty as predictors. The salience of these markers for the respective research sites has been empirically demonstrated above and is supported by the relevant literature as we have seen. Figure 1 visualises the corresponding 95% confidence intervals. We immediately see that literacy is a key marker of poverty differentiation in both Laos and Rwanda. Holding size and employment type are also crucial, although holding size just misses the significance threshold in Rwanda whereas casual wage employment is highly significant. This substantiates our earlier work which argued that, given widespread land scarcity in rural Rwanda, labour relations are particularly important to understanding differences among generally land-poor households (X et al. 2021[blinded for reviewers]). Figure 1 also shows that lack of meat or fish consumption is a useful predictor in Rwanda and being part of an ethnic minority significantly increases the chances of being poor in Laos. In addition, table B1 reveals that the MPI model in Laos and the EDI model in Rwanda have good model fit: a McFadden Pseudo R^2 between 0.2 and 0.4 indicates excellent fit (McFadden 1979) and one of 0.17 indicates good fit (Schwarz et al. 2020).

Table 9: Average Marginal Effects (AME) for household characteristics on probability of household being MPI-/EDI-poor respectively (based on logistic regressions)

| | Average Marginal Effects | | | |
| | Laos | | Rwanda | |
Variable	MPI-poor	EDI-poor	MPI-poor	EDI-poor
Operational holding	-0.048**	-0.023*	-0.080	-0.373
	(0.010)	(0.010)	(0.121)	(0.200)
Casual agricultural wage employment	0.111**	0.021	0.176**	0.193**
	(0.027)	(0.034)	(0.060)	(0.057)
Proportion of illiterate adults	0.219**	0.172**	0.192*	0.235**
	(0.040)	(0.044)	(0.081)	(0.075)
Did not consume meat or fish the previous day			0.213**	0.196*
			(0.078)	(0.075)
Ethnic minority	0.106**	0.069*		
	(0.031)	(0.031)		
Number of observations	485	485	181	181

Note: The table presents average marginal effects after logit regressions (see table A1 in the appendix). Population estimates in each country are based on the sub-sample with complete MPI and EDI information. The dependent variables are the two poverty categories for each country. Standard errors are in parentheses. *$p<.05$, **$p<.01$.
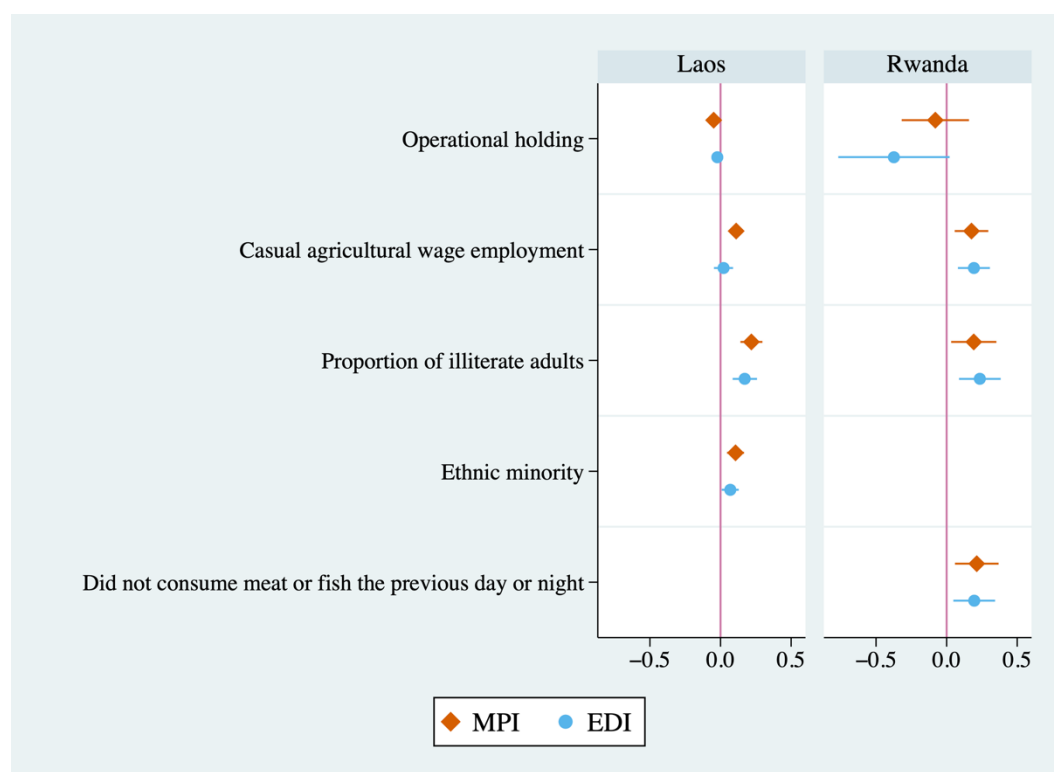
Figure 1: Average Marginal Effects (AME) with 95% confidence intervals

In order to compare predictive power across models, we conducted a binary classification analysis.[14] In a first step, we created confusion matrices to compare actual and predicted poverty status for the regression sub-sample with complete MPI and EDI information and based on the logit coefficients of the population estimates in table B1. The optimal cut-point for each model was set where the respective sensitivity (the true positive rate) equals, or is closest to, the respective specificity (the true negative rate), i.e. where the probability of incorrect classifications is the same, or almost the same, for poor and non-poor households (Larner 2015; Rui et al. 2019). Table 10 presents the confusion matrices, optimal cut-points and selected performance measures. The accuracy (the percentage of cases that have been correctly classified) is highest in the MPI model in Laos with 79% followed by the EDI model in Rwanda with 71%. This is relatively high given the inclusion of only four markers of poverty. The McNemar test, a non-parametric tests for paired samples and data with binary responses (Agresti 2019), reveals that the probability of a correct prediction of the MPI model is statistically significantly different to the probability of a correct prediction of the EDI model in Laos but not in Rwanda. The Matthews Correlation Coefficient (MCC) confirms the finding that known markers of poverty can predict MPI status better than EDI status in Laos and EDI status better than MPI status in Rwanda. The MCC is a robust and reliable binary classification metric that is unaffected by data set imbalance such as the imbalance in our Lao sample (Chicco and Jurman 2020). It is based on the Pearson Product Moment Correlation Coefficient and ranges from -1 to + 1 with 0 being the expected value of a coin flip (ibid.). Following the interpretation of the Pearson Coefficient in social sciences (see Weinberg and Abramowitz 2020), an MCC of 0.44 (MPI Laos) and 0.41 (EDI Rwanda) can be characterised as a moderate to strong positive relationship.

While the contingency matrices and their associated performance matrices depend on the chosen cut-point, receiver operating characteristic (ROC) curves plot the sensitivity against (1-specificity) for different cut-points, and the Area Under the ROC Curve (AUC) therefore represents "an effective way to summarize the overall diagnostic accuracy of the test" (Mandrekar 2010, 1315). The AUC can range from 0 to 1. Values of 0.5 indicate no discrimination, values between 0.7 and 0.8 are deemed acceptable and values between 0.8 and 0.9 are excellent (Mandrekar 2010). Again, we find in table 10 that the MPI model works best in Laos and the EDI model best in Rwanda. Across all cut-points, our MPI model in Laos will predict MPI status correctly about 85% of the time and the EDI model in Rwanda will predict EDI status correctly about 77% of the time.

Finally, figure 2 displays the relationship between accuracy and the probability cut-points for all four models. This is a more intuitive visualisation than ROC curves. For the balanced Rwanda data set (44% of households are MDI-poor and 49% are EDI-poor in the regression sub-sample), the meaningful cut-off range is around 0.5, whereas the pertinent range for the imbalanced Lao data set (14% of households are MDI-poor and 14% are EDI-poor in the regression sub-sample) is between 0.1 and 0.2. Figure 2 shows that the EDI model in Rwanda is consistently more accurate across all meaningful cut-points than the MPI model and vice versa for Laos.

Our regression and classification analysis shows that known key markers of poverty can predict adjusted global MPI status better than EDI status in Laos, whereas the EDI framework performs better than the MPI framework in Rwanda. These findings are in line with our bias analysis above and the bivariate analysis displayed in tables 6-8. We conclude that the EDI framework may therefore be most appropriate in high deprivation contexts whereas the MPI framework may be preferable in relatively low deprivation contexts.

Table 10: Confusion matrices and performance measures for EDI and MPI models in Laos and Rwanda

Model	Confusion matrix					Accuracy	McNemar's chi-squared	MCC	AUC
MPI Laos	Cut-point: 0.16		*Predicted status*		Total	78.97%		0.44	0.85 [0.81;0.90]
			NP	P					
	Actual Status	NP	329	88	417				
		P	14	54	68		36.30**		
	Total		343	142	485				
EDI Laos	Cut-point: 0.14		*Predicted status*		Total	65.36%		0.22	0.72 [0.66;0.79]
			NP	P					
	Actual Status	NP	273	145	418				
		P	23	44	67				
	Total		296	189	485				
MPI Rwanda	Cut-point: 0.44		*Predicted status*		Total	67.40%		0.35	0.72 [0.65;0.80]
			NP	P					
	Actual Status	NP	68	33	101				
		P	26	54	80		0.58		
	Total		94	87	181				
EDI Rwanda	Cut-point: 0.52		*Predicted status*		Total	70.72%		0.41	0.77 [0.70;0.84]
			NP	P					
	Actual Status	NP	65	27	92				
		P	26	63	89				
	Total		91	90	181				

Notes: NP: Non MPI-/EDI-poor respectively
P: MPI-/EDI-poor respectively
MCC: Matthews Correlation Coefficient
AUC: Area Under the ROC Curve
**p<.01
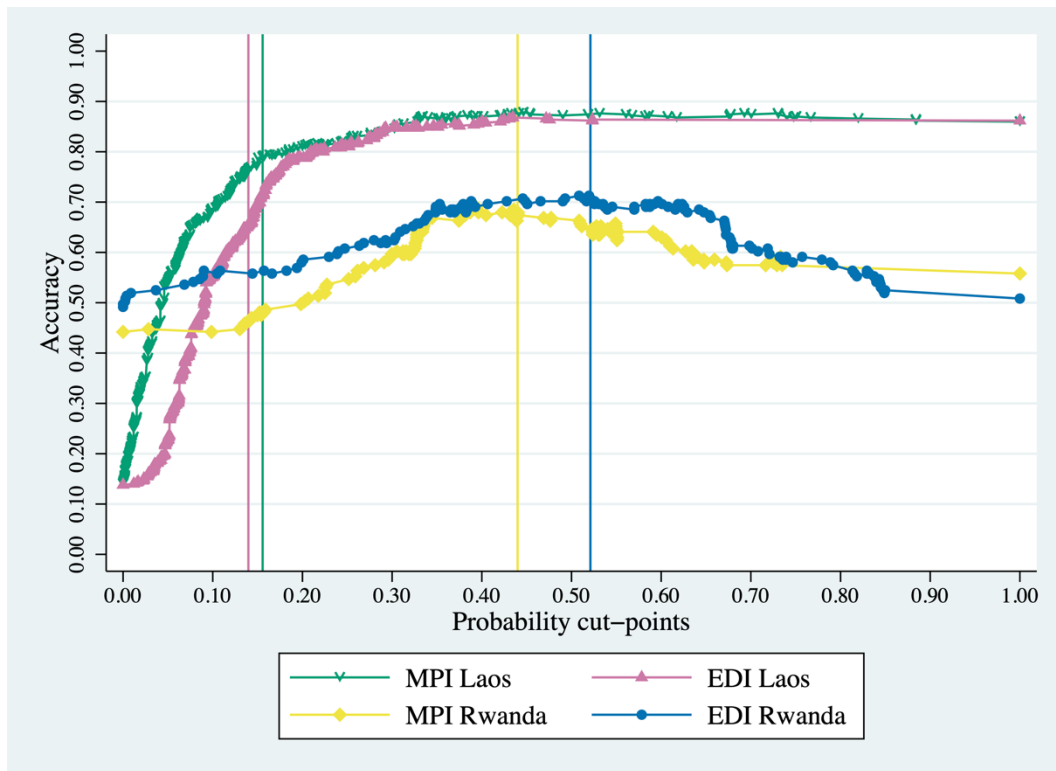
Figure 2: The relationship between accuracy and probability cut-points across all four models

Implications for development effectiveness

Methodological implications for programme evaluation

We have shown that the MPI and EDI frameworks, each with their distinct purposes and weaknesses, can both well identify households that are consistently worse off on multiple key markers of poverty. For policy or programme design, the MPI methodology offers substantially more options than the EDI methodology and has been widely used by governments to shape policy and inform beneficiary targeting (Alkire 2018), as well as by development agencies such as the World Bank and the United Nations Development Programme to track development progress (World Bank 2018b; UNDP 2020). Two factors make it particularly attractive: MPIs can be decomposed and aggregated at various levels, providing an 'information platform' that includes a headline number and sub-indices (ibid.), and it measures livelihood outcomes directly. MPI measures may be particularly useful to assess programmes aiming to improve the provision of public goods and services given that many of its indicators relate to these. The normative design of and implicit trade-offs in the MPI methodology, however, have to be made transparent and assessed critically, as the index could be constructed on any number of different indicators and therefore easily misused.

In contrast, the EDI framework has, to our knowledge, not yet been used for the design or evaluation of development programmes. This is understandable given its novelty and the lack of testing so far (something this paper hopes to partially remedy). Nevertheless, it is likely to be applied in the future, given that it was formulated with just such a purpose in mind: '[The EDI] may be particularly useful for evaluative purposes: to assess the extent to which polic[i]es and programmes are linked to positive outcomes for the most deprived' (Sender, Cramer, and Oya 2018, 2). The simplicity and unidimensionality of the EDIs avoid some of the normative trade-offs inherent in the MPIs but come at the cost of not

permitting direct measurement of the satisfaction of basic needs beyond private consumption goods. In the remainder of this section, we consider the viability of the MPI and EDI frameworks as programme evaluation tools across three important dimensions: context relevance, reliability and practicality.

Context relevance relates partially to the validity of measurement. Face validity is high for both MPI and EDI methodologies, provided it is made clear what each index attempts to measure (shortfalls in basic needs and private consumption, respectively). In addition, our analysis has shown that the predictive validity of both measures is also satisfying as they identify significant differences on a number of key markers of poverty. Crucially, for both indices the directions of change and significances of most variables are the same.

Beyond validity concerns, context relevance also refers to the index's suitability to the context of the development intervention which is to be assessed. At the very least then, indices should allow flexibility in the indicator choices and cut-off points so that they can be adapted to local circumstances and carry meaning for the lives of research participants. While the global MPI imposes a set design for comparability, the Alkire-Foster methodology (Alkire and Foster 2011b) upon which it is based can be easily adapted to local contexts as we have done here, as can any EDI since it is based on local consumption patterns.

Second, poverty indices should be reliable. The global MPI has been shown to be robust to a number of different parameter specifications (Alkire and Santos 2014); however, research on its reliability is rather new and sometimes contested (Catalán and Gordon 2020; Santos and Villatoro 2020). While no study to date has directly tested EDI reliability, we would argue that EDIs are reliable indices given, on the one hand, the simplicity and easy verification of consumer goods included and, on the other hand, our findings which show that the EDIs adequately discriminate most-deprived and less-deprived on relevant variables, especially in a high deprivation context.[15] Our findings also show the EDIs to be robust to slight variations in design: for example, almost all statistical significances remain the same when we exclude either wall (Laos) or floor (Rwanda) materials from the respective EDIs and adjust the cut-off points accordingly to identify a similar proportion of households as EDI-poor. Moreover, we have also conducted our EDI analysis on the much larger samples where we have complete EDI data and all directions of change (except for the remittance dummy in Rwanda which is not statistically significant in either case) and almost all significances remain the same as the ones shown in tables 6-9 which were based on the sub-samples with complete EDI and MPI data. Finally, Sender et al. (2018) find that a weighted EDI based on principal component analysis identifies the same respondents to be EDI-deprived as their unweighted version.

Lastly, evaluation tools should ideally be practical enough to be used even for resource-constrained programmes. One of the motivations behind the creation of the MPI framework was in fact to provide a practical alternative to other measurement approaches (Alkire and Foster 2011a). To some extent, it has succeeded: the global MPI is based on a limited number of questions; can be adapted to practical considerations; and resources on its design and use are readily available. Yet, its application remains complex, especially because of its high data requirements and the combination of questions needed at both individual and household levels. Regarding the EDI framework, practicality is its main advantage: there are fewer questions; answers can often be directly verified by enumerators; and data cleaning and analysis are more straightforward. The result is a more affordable, and therefore accessible, tool.

To conclude, we offer two crucial considerations for the use of the MPI and the EDI methodologies in any development intervention. First, the design of either index has to be made transparent and based on local perceptions of desirable standards of living. Second, the design and choice of the index should depend on programme means and goals. What might be appropriate for one intervention may not be for another.

Policy implications

In addition to the above considerations for programme evaluation, several policy implications emerge from our multi-country poverty profile analysis. A first observation is that the link between agricultural growth and poverty reduction is complex and mediated via a number of mechanisms (Irz et al. 2001). On the one hand, export-led agricultural growth is particularly promising because it provides much-coveted foreign exchange earnings and offers opportunities for value-chain upgrading at the macro level, while stimulating local labour markets and incentivising producers at the micro level (Cramer, Sender, and Oqubay 2020). On the other hand, agricultural transformations of this kind also carry significant risks, potentially exacerbating exclusions from land (Hall, Hirsch, and Li 2011) as well as inequality and poverty (McMichael 2013). This can be seen in our case studies where, despite the many benefits of coffee production, there is cause for concern. While the Bolaven region is among the richest in Laos, observers worry about rising poverty and inequality, not least due to contradictory impacts of large-scale land concessions (Baird 2011; Delang, Toro, and Charlet-Phommachanh 2013). The same concerns are raised in Rwanda in the context of green-revolution-style policies (Dawson, Martin, and Sikor 2016). Indeed, in Nyamasheke, export agriculture has not left this region any richer in regional comparison despite its vital importance for local livelihoods (NISR, 2018a). There is thus a need to safeguard the assets of the poor and to adopt additional policies if growth is supposed to be pro-poor.

We would argue based on our findings that increasing returns to labour (whether self- or wage-employed) is crucial for long-term poverty reduction. So-called supply-side policies are important in their own right. This is clearly the case of education. In addition, better education could improve access to higher skilled jobs; however, to the extent that there remain few such jobs, there are limits to what such policies can achieve (Amsden 2010). Another policy implication is that interventions should strengthen smallholder farmers' access to land as our findings show that land remains closely linked to poverty and is subject to growing pressures in both Laos and Rwanda.

The value of these supply-side measures notwithstanding, demand-side policies to improve working conditions and increase the number of paid working days would go a long way to improving the living conditions of the poor, many of whom lack access to high-skilled jobs or high-productivity self-employment. Moreover, assessing changes in working conditions and the number of paid work days could provide clear benchmarks and additional tools for evaluating programme interventions (see for example Oya 2015, for decent work indicators in rural areas). Our findings show that these interventions can never be purely technocratic but will always be embedded in unequal power relations, especially related to ethnicity, class and gender, that will shape programme success and should therefore inform programme design.

Conclusion

Evaluating the effectiveness of development policies and programmes requires practical, reliable and context-relevant measures of poverty. Our paper, in the first such study, applied two promising frameworks of non-monetary poverty measurement, EDI and MPI, to the same samples in two different original surveys in order to study the characteristics of the most deprived in the main coffee-producing areas of Laos and Rwanda. Strikingly, the MPI and EDI frameworks yield similar and statistically significant results on key markers of poverty in both a relatively high (Nyamasheke) and low (Bolaven Plateau) deprivation context: they show that the poor are strongly characterised by lower levels of secondary, especially female, education and literacy; by rudimentary sanitation conditions; by a relative lack of access to land and a high dependence on casual agricultural wage employment; and by a high share of minority ethnic groups in the case of Laos and low meat consumption as well as a predominance of female household members and female-headed households in the case of Rwanda. Both locally adapted indices are thus capable of describing the main deprivations experienced by the poorest households.

Different conceptualisations of the two indices, however, result in limited overlap: in Laos only 36% of the MPI-poor are also EDI-poor while in Rwanda it is 68%. Our analysis shows that known key markers of poverty can predict adjusted global MPI status better than EDI status in Laos, whereas the EDI framework performs best in Rwanda. Each index has its strengths and can be used for different purposes. In particular, we argue that the EDI framework provides a quick and reliable way to identify households with very low standards of living in high deprivation contexts. It is particularly useful for programmes with limited resources operating in comparatively poor rural settings. Future research should explore how different distributions and weighting systems, selection criteria of consumer goods, and larger sample sizes affect the validity of the EDIs and to what extent the EDI methodology is useful for comparisons across time to enable programme benchmarking.

At the level of policy effectiveness, this article shed further light on the complex and uneven effects of export agriculture in producing regions. We have focused on how the poor are situated in production and labour relations to understand differences in poverty. This reveals that livelihoods remain very much linked to farming and therefore to land (through ownership or wage work), and that land remains a marker of wealth. Our analysis also underlines the centrality of wage work and dynamic labour markets in both Laos and Rwanda, albeit with very different characteristics. We encourage researchers to examine the regional and migratory dynamics introduced by large-scale concession companies in Laos and the impact on Rwandan labour markets of recent restructuring of the coffee value chain.

Endnotes

[1] This research is part of the FATE (Feminization, Agricultural Transition and Rural Employment) project. We refer to our surveys as FATE surveys to distinguish them from other data sources.

[2] We selected two close to Erlebach's (2006) study site. This allows for some comparisons across time.

[3] One selected village in Laos is close to, but not part of, the Bolaven Plateau. Some inhabitants used to grow coffee in the past but production is now dominated by rubber plantations.

[4] While statistical techniques such as principal component analysis (PCA) can be helpful to identify a subset of a large number of eligible goods, it is more important to rigorously justify the selection process in the terms outlined here. The same goes for the assignment of weights to the index. Cramer et al. (2020, 205) note that 'unweighted indices of socio-economic status have often been found to perform just about as well in identifying low socio-economic status rural households as the indices constructed using PCA to estimate weights'.

[5] Since the focus is on private consumption, goods received as gifts or donations should ideally not be counted. This is a limitation of the FATE surveys which did not ascertain how goods were obtained.

[6] In the two instances where households reported having goods requiring reliable electricity but did not have access to electricity, we did not count these goods (i.e. these households count as non-owning). One of the households simply remained EDI-poor whereas the other changed from non EDI-poor to EDI-poor.

[7] For this reason, we combined the categories basic mobile phones and smartphones into whether the household has any type of mobile phone or not (landlines being irrelevant for private households in our sample). On the other hand, we included radios and torches separately from mobile phones as households in our sample frequently own them together with mobile phones.

[8] We thank an anonymous reviewer for this suggestion. After analysing wall, floor and roof materials in each sample, we included the indicator with the largest variation in each case: walls in Laos and floors in Rwanda.

[9] We thank Prof. John Sender for this suggestion.

[10] Despite the central importance of employment to poverty, we have not added any employment indicators into our MPIs and EDIs for four main reasons. First, the concept and design of the EDI framework is based upon private consumption only. Specifically, it derives from Engel-type expectations about the division of consumption between necessities and more luxurious goods and aims to identify people with extremely low living standards (see Sender, Cramer, and Oya 2018). Therefore, employment indicators have no part here conceptually. Second, the aim of the EDI framework is to provide a practical way of identifying the most deprived using easily verifiable answers. Most items in the EDIs are tangible and visible goods. Employment data is much more difficult to assess not least due to the informal and dynamic nature of most rural labour relations as well as occupational multiplicity and questions about household membership. This does not mean that employment data cannot or should not be collected. Quite the contrary, our article underlines its relevance. However, it is more difficult and resource-intensive to capture employment relations accurately (e.g. requiring more enumerator training and probing as well as a more complex survey design) and, therefore, it is not conducive to the aims of the EDI framework. Third, most global and national MPIs do not use employment data. In fact, the MPI framework neither requires nor precludes the inclusion of employment indicators. This not only highlights the flexibility of the MPI framework but also underlines a certain conceptual arbitrariness that is not present in the EDI framework. Fourth, as employment is neither inherently required in the MPI nor the EDI frameworks, it is revealing to leave it out in both indices and to assess the extent to which these measures help us understand the employment characteristics of poor households.

[11] We thank an anonymous reviewer for this observation.

[12] Variables that are part of the MPI framework have been omitted as there are significant differences by design: the reason that EDI-poor-only households are not also MPI-poor is mostly because many are not deprived in schooling and/or nutrition which are heavily weighted in the MPI framework.

[13] To create a dichotomous indicator, we exclude child-headed or male-headed-only households as they are negligible.

[14] Classification analysis is typically used in machine learning and its application to poverty research is relatively new (Gao et al. 2020). Whereas these machine learning classification models are built on algorithms that are trained and then tested on separate data sets with the same predicted variables, our goal here is not to train a machine learning algorithm but simply to evaluate the confusion matrices obtained from the regression models with known markers of poverty.

[15] Differences in the understanding of what constitutes ownership may however limit test-retest reliability.

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Appendix A: MPI adaptation

In measuring the adjusted global MPI and destitution measure for our samples, we have stuck as closely to the most recent version of the global MPI (Alkire, Kanagaratnam, and Suppa 2020) as was possible with FATE surveys, bar four main differences. It is one of the merits of the MPI framework that such adaptations are possible while remaining consistent with the underlying Alkire-Foster methodology (Alkire and Foster 2011b). The structure of our adjusted global MPI and destitution measure is outlined in table A1.

First, we continued to use the flooring indicator as specified by Alkire & Robles (2017) in our calculations: a household is deprived if it has a dirt, dung, sand or unspecified type of floor.[1] Second, the FATE surveys did not differentiate between protected and unprotected wells and springs. However, DHS and MICS data reveal that both sources are rather important for rural areas. To avoid bias, we excluded the indicator on safe drinking water. Since it would have counted only 1/18 of the total, this exclusion barely affects H and the MPI.[2] The remaining main differences relate to the health dimension, which is notoriously the most difficult to measure.

Third, we did not collect data on child mortality in Rwanda, as we were advised it would be culturally inappropriate. Following the same procedure as for the global MPI (Alkire, Kanagaratnam, and Suppa 2020), we therefore increased the weight of the food and nutrition indicator to ⅓ in the Rwandan destitution measure and did the same for our benchmark destitution MPI based on DHS data to increase the comparability of the two data sets.

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[1] Since 2018, the Oxford Poverty and Human Development Initiative (OPHI) has replaced the flooring with a housing indicator in the global MPI (Alkire, Kanagaratnam, and Suppa 2018). It counts a household as deprived if either the floor is made of natural materials or the roof or walls are made of natural or rudimentary materials including reused wood, wood planks or plywood. While it does make sense to consider walls and roofs as well, it does not seem adequate to include some of these materials in the deprived category and this level of detail is not differentiated in the FATE surveys.

[2] When calculated on the DHS and MICS data respectively for Nyamasheke (using the adjusted destitution measure) and for rural areas in Laos (using the adjusted global MPI), the multidimensional poverty headcount ratio and the MPI changed by less than 5 percentage points in either country when excluding the water indicator.

Table A1: Dimensions, indicators, weights and deprivation cut-offs applied to the adjusted global MPI and destitution measure based on Alkire, Kanagaratnam, and Suppa (2020)

Dimension	Indicators	Weights[1]	MPI-poor, if	Destitution-poor, if
Health		1/3		
	Food/nutrition[2]	[1/6]	households regularly lack access to adequate food	households frequently lack access to adequate food
	Child mortality[3]	[1/6]	a child under 18 has died in the household in the five-year period preceding the survey	
Education		1/3		
	Years of schooling	[1/6]	no eligible household member has completed six years of schooling	no eligible household member has completed at least one year of schooling
	School attendance	[1/6]	any school-aged child is not attending school up to the age at which he/she would complete class 8	any school-aged child is not attending school up to the age at which he/she would complete class 6
Standard of living		1/3		
	Cooking fuel	[1/15]	a household cooks using dung, shrubs/straw/grass, wood, charcoal, or coal[4]	
	Sanitation	[1/15]	a household has unimproved or no sanitation facility, or it is improved but shared with other households[5]	
	Electricity	[1/15]	a household has no electricity	
	Flooring	[1/15]	a household has a dirt, sand, dung, or 'other' (unspecified) type of floor	
	Assets	[1/15]	a household does not own more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike, or refrigerator, and does not own a car, truck or tractor[6]	a household does not own any of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike, or refrigerator, and does not own a car or truck[6]

Note: [1] Nested weights are indicated in brackets.
[2] Different from the global MPI and destitution indicators and the ones used with the DHS/MICS data below.
[3] Only for Laos. In Rwanda, the nutrition weight as adjusted accordingly to 1/3.
[4] The FATE survey did not ask about agricultural crops as cooking fuel.
[5] We did not collect information on open defecation which would be needed to calculate the global MPI destitution indicator.
[6] We included the common two-wheel tractors in Laos, known as 'tok-tok'.

Fourth, we did not have the means to collect anthropometric data. We instead included two questions about food access and variability in the individual module of the questionnaire that was asked to both male and female household heads (usually the parents) if they were available.[3] This results in an uncensored headcount ratio in Laos that is very similar to the rural average based on anthropometric DHS data. The two indicators measure different, albeit related things. However, our results are also supported by the findings of the Lao Risk and Vulnerability Survey (MAF, 2013) which reports, based on data collected between December and February, that 18.6% of households in the Central and Southern Highlands were unable to access sufficient food for at least one day in the past month.

Rwanda presents a much bleaker picture with an uncensored headcount ratio of 42% in this dimension. This figure stands in stark contrast to the 5% based on the DHS destitution indicator. There are, however, solid reasons to believe that the food situation in Nyamasheke is much more problematic. First, although the World Food Programme (WFP 2018) classified 21% of households in Nyamasheke as food-insecure, a further 52% are only marginally food secure. Second, the same data show that 78% of women of reproductive age in Nyamasheke do not meet minimum dietary diversity (NISR, 2020). Third, our qualitative data strongly corroborate these findings.

We also calculated the Minimum Dietary Diversity Index for Women (MDD-W), defined as 'a dichotomous indicator of whether or not women 15–49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality' (FAO and FHI 360 2016, 2). In Nyamasheke, the mean number of food groups consumed per female household head of reproductive age is 2.5 and the proportion who do not meet minimum dietary diversity is 97% according to FATE data. The WFP's numbers for Nyamasheke are 3.4 and 78% respectively (NISR, 2020). We suspect that the main reason for this difference is seasonality: the FATE survey was conducted in the 'lean season' (i.e. between planting and harvest), whereas WFP data were collected between March and April (outside the lean season) of the same year. In Laos, we found an average of 3.9 food groups consumed per female household head of reproductive age, 73% of whom do not meet the requirement after the coffee harvest season. The Lao Food and Nutritional Security Survey calculated the MDD-W for pregnant women or women with a live birth in the last two years and found corresponding numbers of 3.4 (rural without road), 3.9 (rural with road) and 81% (rural without road) and 67% (rural with road) respectively on data collected during the lean season (Lao Statistics Bureau 2016).[4]

MPIs can only be calculated for households with complete information on all indicators (Alkire, Kanagaratnam, and Suppa 2020). The response rate of each MPI indicator was above 90% in both Laos and Rwanda except for the nutrition indicator in Laos where we only have information on 76% of

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[3] For the adjusted global MPI in Laos, households were counted as deprived if either household head indicated that they sometimes (during two to four months in the last 12 months) worried about not having enough food for the household and that they sometimes (during two to four months in the last 12 months) did not manage to buy the type of food they wanted to eat. Households were also considered as deprived if either household head said that either of these occurred often (during more than four months in the last 12 months, i.e. significantly more than during the entire lean season). For the adjusted destitution measure in Rwanda, households were counted as deprived only if either household head indicated that both of these occurred often (during more than four months in the last 12 months, i.e. significantly more than during the entire lean season). In cases where only one household head was available (e.g. widowed households), we based the indicator only on her or his responses for both the adjusted global MPI and the adjusted destitution measure.

[4] We also compared FATE data to the Lao Population and Housing Census of 2015 to verify the reliability of our data for other indicators: census data report that in the six villages sampled for this study, 94.05% of households have electricity, whereas the FATE survey finds 99.12%. The Census puts average household size at 4.98 persons, percentage of households with operational farmland at 94.42, and percentage of the literate population 15 years or older at 82.91. The numbers in the FATE survey are 5.24, 91.47 and 77.93 respectively, indicating that our data are reasonably reliable considering different survey designs, sampling procedures and a three-year time difference. Some of these indicators have been used in the poverty analysis above.

households. The food indicator was the only indicator constructed based on the individual survey module asked separately to each household head, adding data management difficulties, and explaining most of the sample drop in Laos. The EDIs, on the other hand, could be calculated for over 98% of households in our Laotian and Rwandan samples. Most of the sample drop was thus due to the MPIs, which have higher data requirements, and underlines the practicality of the EDI framework. Overall, our sample size was reduced from 714 households to 524 in Laos and from 233 to 198 in Rwanda. We therefore conducted a bias analysis, testing all our variables of interests on households for which an MPI and EDI could be calculated for significance and comparing these results to households for which there was not enough information to calculate an MPI or an EDI. The sample size reduction introduced almost no bias in Laos but some bias in Rwanda where a number of poorer households did not provide enough information for an MPI/EDI calculation.[5]

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[5] In Laos, the excluded group is more deprived in asset ownership. All other MPI components or variables of interest are not significantly different between households with and without MPI/EDI data. In Rwanda, on the other hand, excluded households seem to be worse off on a number of indicators such as sanitation and size of operational holding.

Appendix B: Figures and tables
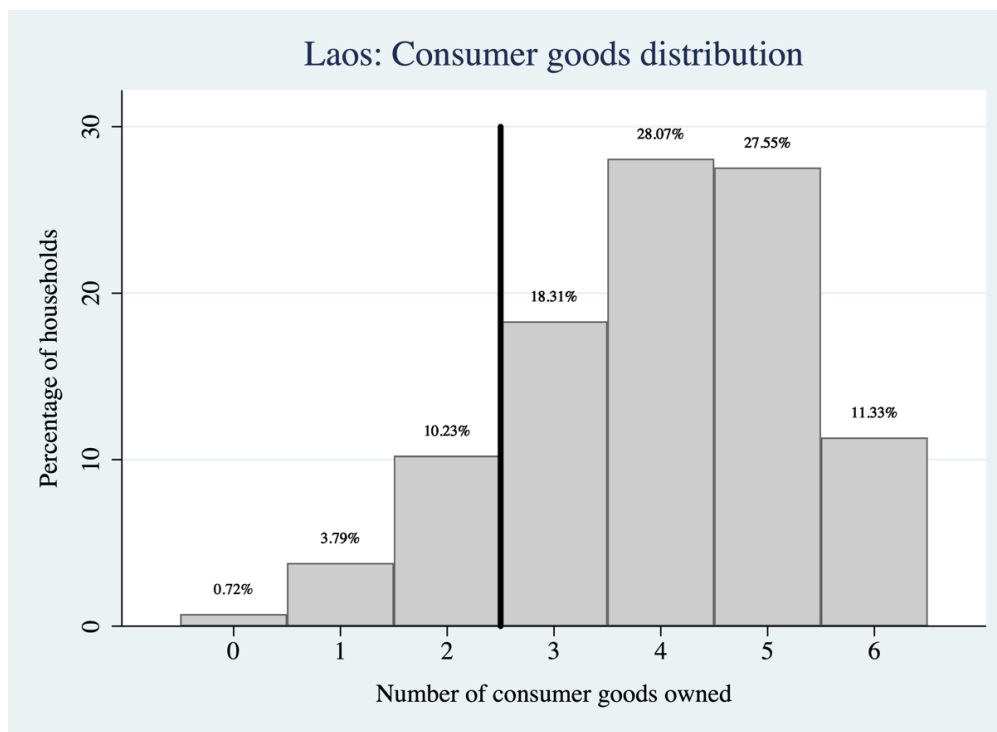
Figure B1: Distribution of consumer goods and cut-off used for the EDI in Laos (population estimates based on sub-sample with complete EDI information: n=707)
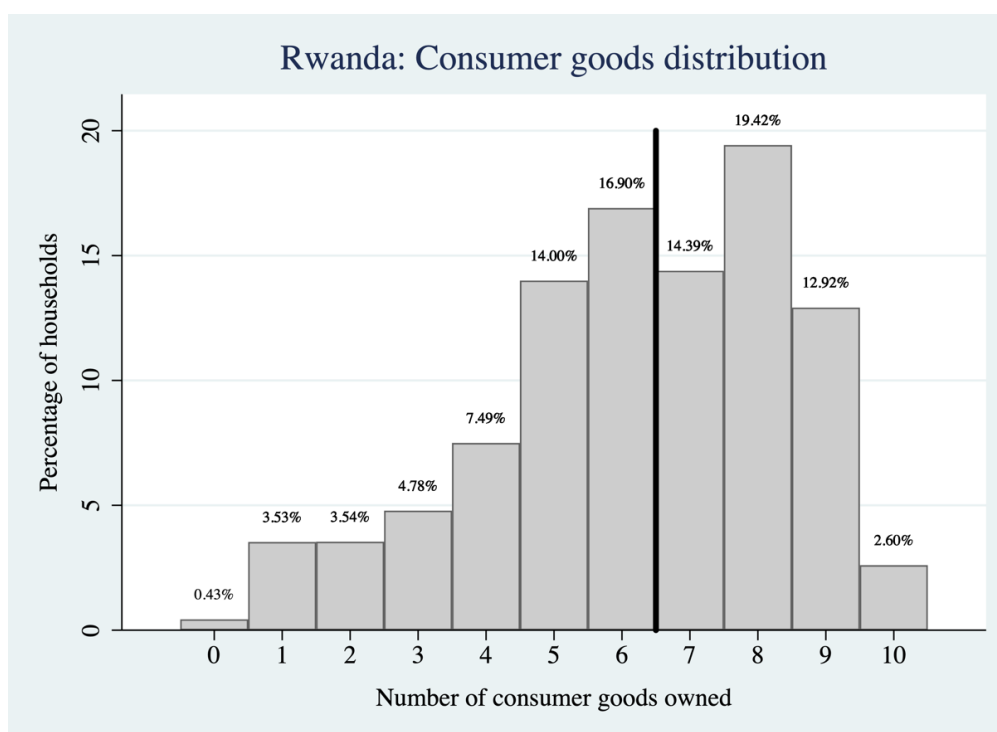
Figure B2: Distribution of consumer goods and cut-off used for the EDI in Rwanda (population estimates based on sub-sample with complete EDI information: n=230)
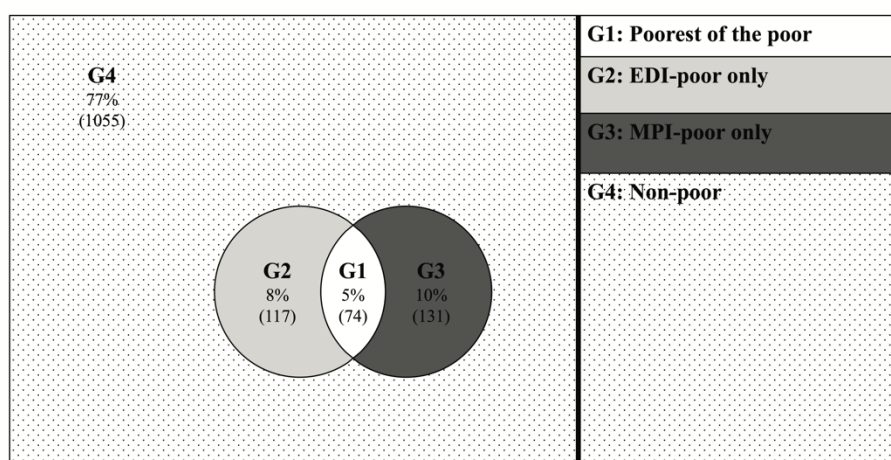
Figure B3: Poverty groups in Laos (population estimates based on sub-sample with complete MPI and EDI information: n=524)
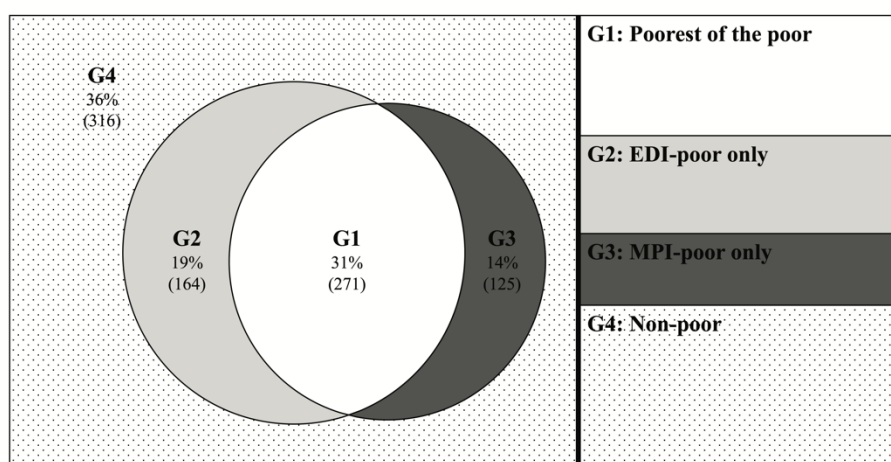
Figure B4: Poverty groups in Rwanda (population estimates based on sub-sample with complete MPI and EDI information: n=198)

Table B1: Logit model for household characteristics on probability of household being MPI-/EDI-poor respectively

| | Logit Coefficients | | | |
| | Laos | | Rwanda | |
Variable	**MPI-poor**	**EDI-poor**	**MPI-poor**	**EDI-poor**
Operational holding	-0.517**	-0.206*	-0.369	-1.889
	(0.102)	(0.088)	(0.567)	(1.050)
Casual agricultural wage employment	1.183**	0.191	0.814**	0.978**
	(0.302)	(0.314)	(0.300)	(0.316)
Proportion of illiterate adults	2.334**	1.569**	0.888*	1.191**
	(0.459)	(0.404)	(0.391)	(0.408)
Did not consume meat or fish the previous day			0.986*	0.990*
			(0.384)	(0.401)
Ethnic minority	1.135**	0.626*		
	(0.339)	(0.278)		
Constant	-2.620**	-2.293**	-1.668**	-1.426**
	(0.376)	(0.283)	(0.385)	(0.406)
Number of observations	485	485	181	181
Adjusted Wald test (Prob > F)	0.0000	0.0000	0.0007	0.0000
Design degrees of freedom	*df*=479	*df*=479	*df*=173	*df*=173
McFadden's Pseudo R^2	0.255	0.086	0.095	0.171

Note: The table presents logit coefficients. Population estimates in each country are based on the sub-sample with complete MPI and EDI information. The dependent variables are the two poverty categories for each country. Standard errors are in parentheses. *p<.05, **p<.01.

Paper III: From theory to the field and back again: fieldwork-based research on social differentiation in agrarian studies

Authors: Patrick Illien and Helena Pérez Niño

From theory to the field and back again: fieldwork-based research on social differentiation in agrarian studies

Fieldwork is the cornerstone of empirical research in agrarian studies. The methodological debate has, however, not kept up with the innovative conceptual developments taking place within the discipline. This is particularly evident in the study of social differentiation, a key concern in agrarian scholarship. Through a review of the empirical literature on social differentiation, we show an eclectic array of strategies utilized flexibly in the field in contrast with the relative lack of common methodological approaches, which we attribute to the dearth of forums for methodological discussion. We identify two main approaches to the empirical investigation of social differentiation: a stratification approach, where respondents are assigned to strata based on socio-economic characteristics, and a relational approach that studies the range of social interactions among groups of respondents and their distributional implications. We recognize the usefulness of stratification exercises as a first step in the study of social differentiation but ultimately argue for a 'relational shift' that allows for studying the dynamics of social differentiation as opposed to merely measuring it.

Keywords: agrarian studies; social differentiation; methodology; fieldwork; research design; operationalization; political economy

Introduction

Agrarian studies have a rich tradition of conceptually diverse, interdisciplinary, field-based research.[1] However, for all the insights and theoretical sophistication, there have been comparatively fewer discussions pertaining to how to deploy and operationalize relevant categories when designing and implementing field-based research. The way theory and fieldwork interact with and stimulate each other is often glossed over. This imbalance between a wealth of theoretical discussions on the one hand, and a comparative dearth of methodological considerations on the other is unhelpful for several reasons: first, given the lack of a common methodological corpus or toolkit, many researchers interested in engaging with agrarian studies find themselves devising their own *ad hoc* ways of translating key theories and categories into workable research strategies. Second, silence about methods and methodology makes for less coherent fieldwork practices. More concerted efforts towards methodological reflexivity will likely strengthen the quality of empirical evidence collected and analyzed and ultimately enhance the contribution of scholarship in (critical) agrarian studies.

A salient example of this gap between conceptualization and fieldwork practice is the study of agrarian social differentiation. Agrarian social differentiation is understood as the process whereby systemic inequalities arise among social groups.[2] In capitalism, such differentiation is fuelled by the combined and contingent effects of processes such as the commodification of subsistence; the accumulation of capital by some groups and the dispossession of others; as well as by competition and

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[1] Although both authors work broadly within an agrarian political economy framework, this paper is concerned with all branches of (critical) agrarian studies engaging with the concept of social differentiation.

[2] Agrarian studies' conceptualization of social differentiation is unrelated to theories of differentiation in sociology such as Parsons' (1940) structural functionalism, where status and rank are derived from systemic dynamics aiming to conserve and stabilize societies along sets of dominant values, or Luhmann's (1977) approach to functional differentiation, where status is proposed as the result of the interplay of various social subsystems and their environments.

productive specialization. Colonial occupations and capitalist transitions of the 19th and 20th centuries accelerated the progressive commodification of production and the expansion of commodity relations through the mobilization of labour, land and other factors of production at a global scale (Bernstein, 1992). These systematic inequalities can be traced along emerging class differences, but a wealth of research has demonstrated that processes of social differentiation are similarly inflected in context-specific ways by other social dimensions such as gender and intergenerational relations.

Debates about social differentiation are seminal in agrarian studies, going back to Lenin's and Chayanov's contrastive arguments about the engines of change in agrarian societies and the subsequent debates about the applicability of these theses to late (or stalled) transitions to capitalism and other contemporary cases (Bernstein, 2009; Deere & de Janvry, 1981; Shanin, 1972). With the revival of interest in agrarian studies during the period of decolonization and the profound socio-economic transformations unleashed by the globalization of agriculture, the study of social differentiation has been on the rise. Social differentiation is studied mainly through exercises of household stratification and in some cases by tracing the relational dynamics among social groupings. This paper tracks examples of the stratification and relational approaches used in fieldwork and contributes to furthering the discussion about researching social differentiation.

This paper argues that the dominance of the 'stratification' approach has led to an analytical impasse: the study of social differentiation is frequently focused on the characterization of individual households in terms of income and access to resources, to the detriment of research into the socio-economic relations in which households participate. Grouping households according to common characteristics – the most widely used method for the study of differentiation – has become an end in and of itself in agrarian studies, often without linking assets and incomes to roles in the social division of labour, and, further, to class 'locations'. Developing the propositions of the 'relational' approach to social differentiation instead shifts the emphasis to the social and economic relations between and within households and other actors (firms, institutions). It is argued that these relations – as opposed to the discrete characteristics of households alone – produce, maintain and modulate social differentiation.

Such a call for a 'relational' turn in the study of social differentiation is not new. As the fieldwork practices surveyed here show, many researchers have previously developed these ideas in their research. However, we argue that a more systematic discussion of the methodological implications of the relational approach on fieldwork is needed. Concretely, the 'relational turn' would involve decentring the analysis of individual households, focussing more on intergroup relations, and shifting towards gathering information from various participants in such relations. However, even a shift to the 'relational approach' would require analyzing household stratification since relations *per se* do not always lend themselves to direct observation and need to be studied via descriptive accounts provided largely by household members.

This paper aims to start a dialogue about methodological options and challenges in agrarian studies by identifying how conceptual debates about social differentiation can be more systematically translated into fieldwork practices. Our hope is that this will be useful for those conducting fieldwork that is theoretically rigorous, empirically founded and socially relevant.

To map out how social differentiation is studied in fieldwork, we followed a three-stage process: first, we conducted a literature search for work in agrarian political economy; second, we excluded papers that did not involve fieldwork or study social differentiation; and third, we added relevant publications that had not been picked up in the initial search.[3] This survey makes no claim to be exhaustive, but it covers a

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[3] The initial search was conducted in the Scopus database and yielded 494 results. We then used abstracts to select publications according to the following criteria: texts in English; work based on primary research (empirical data or case studies); texts that explicitly discussed their methodological strategies or operationalization; texts that deal in some way with an analysis of agrarian social differentiation. There were no geographical or temporal constraints to the publications selected. After snowballing, this resulted in a final sample of 35 articles (see table in annex).

representative sample of publications. Not all papers selected are directly or solely concerned with social differentiation, but all include some discussion of how differentiation unfolds in their study sites.

The paper is organized as follows: part two introduces stratification and relational approaches to agrarian social differentiation. Part three shows how field researchers creatively operationalize the approaches to social differentiation discussed in part two. This dialogue between theory and fieldwork continues throughout the research process and part four outlines how empirical observations are translated into analytical insights to advance the debate on social differentiation. Finally, we synthesize our findings, concluding that a relational approach to social differentiation may be a way out of the current analytical impasse and sketching out a more explicit formulation of its methodological implications.

Approaches to social differentiation in agrarian studies

Foundational debates

This paper argues that social differentiation could more fruitfully be conceived as the observable manifestation of a range of relations that drive processes of accumulation, the expansion of the market imperative and the emergence of new class structures. Social differentiation therefore gives a glimpse of how structural pressures shape, in uneven and contingent ways, the day-to-day experiences of production and reproduction of households and individuals (White, 1989). Contemporary agrarian studies face the challenge of moving beyond simply observing social differentiation and towards a more empirically-rich exploration of its underlying determinants and its political and societal effects. Researchers adopt ways to link the differential impacts of locally-specific phenomena on individuals and groups to broader socio-economic processes and 'general tendencies'.

In its broadest formulation, social differentiation is the outcome of pressures, however conceived, that result in centrifugal and centripetal tendencies that segment or amalgamate social groups around common interests, experiences and positions, a process inflected differently, according to local relations, by dynamics of class, gender and generation (Bernstein, 2010; Pattenden, 2016; White, 1989).

Two different schools of thought have contributed to this sub-field. On the one hand, V.I. Lenin (1899/1960) developed the thesis that agrarian social formations in contact with the compulsions of commodification and the market experienced a tendency towards segmentation into different 'peasant' classes. This would imply that over time, different social groups form in accordance with patterns in the distribution, access and ownership of the means of production; their role in the process of production; and their labour interactions, ultimately giving way to class-based societies, in the countryside. In this materialist approach, social differentiation is an effect of the emergence of new social divisions underpinned by systemic inequality – or a reproduction squeeze for some and expanded reproduction for others (Bernstein, 1992; O'Laughlin, 2002). Social differentiation is thus constitutive of capitalist development: both as a driving force and a consequence.

In contrast, the seminal work of A.V. Chayanov (1925/1966, 1927/1991) proposed that the peasantry stands as a distinct class, with a unique logic and requiring a different theoretical framework for conceptualization (the theory of the 'peasant economy'). Chayanov's empirical study of the differentiation of peasant societies in early 20th century Russia concluded that rather than class, the drivers of differentiation were the constraints and possibilities associated with the demographic cycle of peasant households. Chayanov observed that, unlike in firms, the main labour input of peasant production was unpaid family labour, and thus argued that the changing balance between workers and consumers within peasant households would be the main determinant of the organization of peasant production and the main driver of (demographic) differentiation. In the Chayanovian tradition, peasants' distinct logic of production ran counter to the logic of capital. This is not to say that peasant societies were homogenous or unchanging, but that social change was driven by the internal logic of peasant production rather than by

market dynamics.[4] Prominent contemporary 'peasantist' authors stress the prominence of mechanisms of demographic differentiation and their impact on, for instance, life cycles (Ploeg, 2013) or on rural livelihoods (Malmberg & Tegenu, 2007; Zinda & Zhang, 2018).

Whereas some scholars continued to rehearse the debate along these lines, others called for a syncretic approach. It was argued that rather than being mutually exclusive, 'Chayanovian' and 'Leninist' pressures were complementary and simultaneously at work, albeit to different degrees and with different temporalities, the former being more cyclical and the latter more secular (Deere & de Janvry, 1981). Therefore, it can be argued that '[a]nyone setting out for field research in communities where smallholder farming dominates, and inspired by only class-based frameworks [...] or only the Chayanovian tradition [...] will miss half the story' (White, 2020b, para. 4).

Stratification approaches

The most widespread conceptual approach to social differentiation is centred on the identification of social strata distinguishable in terms of socio-economic characteristics. This is referred to here as the 'stratification approach'. The groups are not suggested by theory but empirically derived – they result from the researcher's analysis of the data collected in fieldwork. Central to this approach is the exercise of grouping individuals or households according to a set of criteria across which all are evaluated. Widely used indicators of agrarian socio-economic differentiation include income, asset-ownership, wealth, consumption and savings or investment (see for example Gray & Dowd-Uribe, 2013; Snyder et al., 2019). The identification of the indicators that can best capture the most salient groups as well as the selection of the thresholds distinguishing groups are of critical importance when applying this approach. Using this method, every individual or household in a sample can be assigned to a group.

Because stratification approaches propose to analyze societies on the basis of directly observable and measurable characteristics, they not only successfully identify objective groups but can also be used to describe experiences that are common to households in these groups. The methods used include the assignment of households to socio-economic strata through computational analysis, such as clustering or principal component analysis (e.g. Kidane et al., 2019) as well as qualitative and participatory methods such as self-identification and identification by a group of peers (e.g. Vicol, 2019). Stratification as a tool to observe social differentiation has been used in different theoretical traditions, from the livelihoods approach (e.g. Scoones et al., 2018) to research grounded in Marxist political economy (e.g. Pattenden, 2011).

As shown in our review of the literature, stratification is the most widely used approach to studying social differentiation. This approach and its attendant methodologies are simple and intuitive because they (i) observe indicators that are easily quantifiable manifestations of social and economic distributive outcomes (e.g. income or land ownership); (ii) use data based on direct observation; and (iii) apply clear-cut thresholds that allow for assigning all households to their respective strata. However, this appealing clarity and simplicity does not extend to the analysis of relations, which are more open-ended and cannot always be directly observed.

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[4] This view is loosely linked to influential ideas and debates in agrarian studies, such as the 'urban bias' and the inverse size-productivity hypotheses (Lipton, 1977; Griffin et al., 2002; see Byres, 1979; Dyer, 2004; and Karshenas, 2004 for a critique; and Desiere & Jolliffe, 2018; Lowder et al., 2021 for an updated literature survey). It can also be traced to scholarship that postulates 'peasants' as a distinct class in structural opposition to corporate agribusiness and capital (e.g. McMichael, 2006; Ploeg, 2008; Rosset & Altieri, 2017; Williams, 1976).

Relational approaches

A different way to study social differentiation – what we call here the 'relational' approach – goes beyond the identification of groups of households or individuals and instead stresses the nature of the relations between them. Like stratification analysis, relational analysis is ultimately concerned with mapping and explaining socio-economic change in agrarian social formations, but it does so in a more theory-driven way. A range of frameworks can be applied here (class analysis, feminist political economy, etc.) but, importantly, the theoretical framework determines which relations to observe in fieldwork and will hypothesize what groupings could emerge.

Relational approaches assume that social groupings form as a result of the interaction and interrelations among households and individuals. Given this, a relational approach is more sensitive to the tensions of social interaction linked to power differentials and exploitation, than solely on wealth inequality. Another important difference is that a relational approach may be more willing to question whether analysis based on observed 'data points' may be concealing a deeper set of forces in motion. It has been argued that, in contrast, 'stratification-oriented perspectives on class tend to compare and measure the material conditions of labour in isolation from the process of exploitation' (Wright, 2009, as cited in Pattenden, 2016, p. 31).

However, relations and interactions are harder to observe and measure than distributional outcomes, and researchers often need to rely on indirect observations. For example, exploitation can be indirectly observed through calculations of the rate of surplus extraction. But whereas these tensions and imbalances in relations can be more or less intense, they are less amenable to quantification.

Even though a relational approach is regularly linked to Marxist political economy and class analysis (see Campling et al., 2016), it is important to note the variety of researchers outside the Marxist tradition who also embrace such relational logics. This includes studies of social differentiation that trace the formation of identities and social boundaries (Tilly, 1998, 2005) as well as research that is interested in material differences but does not deploy class as a category of analysis, e.g. work on horizontal inequalities (Stewart, 2001), adverse incorporation (Hickey & du Toit, 2013) and durable poverty (Mosse, 2010).[5]

Marxian strands of agrarian studies understand social differentiation as resulting from the social division of the fruits of human labour and associated struggles in the spheres of production, exchange and reproduction. The expansion of capitalism, through the logic of competition, the market imperative and the extraction of surplus value is associated with mounting pressures for the commodification of different dimensions of human life, as well as with accumulation by some groups on the basis of the squeezing of others. In this sense, the study of social differentiation provides an input for the study of the *drivers* and *dynamics* of processes of class formation and agrarian change (Akram-Lodhi, 2005; Harriss-White et al., 2009; Kitching, 1980; O'Laughlin, 2002; Oya, 2007; Pattenden, 2016).

Marxist takes on class differentiation include approaches that stress production and property relations as drivers of the emergence of classes and class conflict (Kitching, 1980; Orvis, 1993); the study of instances in which material class positions do not align neatly with class identities (Bernstein, 2010, 2014); and intersectional approaches that stress the interaction of class relations with other 'determinations' (Baglioni, 2021; Pattenden, 2016; Selwyn, 2021). Class relations are thus understood as '*universal but not exclusive* "determinations" of social practices in capitalism' (Bernstein, 2010, p. 115 italics in original), determinations that are not static but instead change across productive cycles and stages in life (Lerche, 2010); that are not discretely ascribed to household units, as gender and generational power relations problematize this presumed unity (O'Laughlin, 1998, 2014; White, 2020a); and that do not create

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[5] Pattenden (2016, pp. 33–37) refers to this type of analysis as 'semi-relational'. Given that we find many instances of Marxist analysis that are not relational, it seems important to disentangle the perceived equivalence between Marxist and relational approaches here.

transitive relations, as households that are exploited in some relations may in turn exploit others in other dimensions (Illien et al., 2021).

This section has outlined two broad approaches to social differentiation in agrarian studies: the stratification approach which measures attributes of households or individuals to identify groups based on a given set of criteria, and a relational perspective that emphasizes the uneven power relations and tensions *between* groups. Because relations cannot always be directly quantified, they are traced through their indirect manifestations such as exchanges, conflicts or negotiations. For example, while it is possible to study the power inequality in a sharecropping relationship, it is only the proceeds split between landlord and tenant that are directly quantifiable. A relational approach focuses on analyzing the functions, dynamics and drivers of inter-group relations. As a result, it is perhaps less exhaustive than the stratification approach, which can locate all households within a social formation according to some set criteria if the required data are available.

Despite these differences, stratification and relational approaches are not incompatible. In fact, one approach often necessitates elements of the other. Our sample shows that many researchers start by stratifying households and then proceed to analyze power relations based on the proposed groupings (e.g. Harriss-White et al., 2009; Illien et al., 2021; Pattenden, 2011).

From theory to the field…

Scholars and researchers interested in engaging with debates in agrarian studies, much like the sample of contributions analyzed in this section, undertake fieldwork to study the manifestations of social processes and analyze these in light of debates, conceptualizations and arguments on agrarian change. For the most part, these researchers embed their findings within theoretical and conceptual debates in agrarian studies. In many of these papers, theory and fieldwork are co-constructed: while theory gives authors tools to engage with patterns and to make sense of a messy reality, fieldwork enables them to observe concrete manifestations and lived experiences (Joshi, 1981). Whether this is addressed explicitly or not, most researchers in agrarian studies face the challenge of translating concepts and categories in the literature into feasible research questions to use on the ground. This section examines a sample of papers that illustrate the wide range of practices in concept operationalization in this field of study. Our survey of the literature reconstructs pathways of operationalization by discussing not only the challenges and persisting tensions experienced by researchers but also the ingenious applications they have come up in their fieldwork exercises.

Operationalization

Agrarian studies, and agrarian political economy in particular, grapples with abstract concepts that do not always lend themselves to direct observation. It takes as its subject the social dynamics around production, exchange and reproduction – including the character, timing and forms of resistance to the expansion of the logic of profit – property relations (most frequently of land and access to irrigation), labour dynamics around both unpaid and hired work, and accumulation, differentiation and power relations. Studying these processes involves the operationalization of key concepts to identify a set of observable manifestations of these dimensions.

Our survey of the literature shows that while the idea of thinking explicitly about operationalization is more widespread in quantitative research methodologies, the critical intellectual task of translating abstract thought into practical research tools is also implicitly undertaken in much qualitative research. Here, operationalization means transforming concepts, hypotheses and research interests into

agendas for research (including both choices about research methodology as well as the actual themes that can be discussed with respondents, observed in the field or explored in archives).

The papers in our sample translate their interest in social differentiation into fieldwork in a variety of ways. We start by tracing their engagement first with the stratification and then with relational approaches.

An emblematic application of the stratification approach comes from papers couched in the livelihoods framework, work that is broadly concerned with understanding how people reproduce themselves and what strategies of coping, survival or accumulation they deploy.[6] In this framework, social differentiation is understood as the result of these strategies and helps stratify respondents into groups described according to different 'livelihood trajectories'. For example, work in this tradition frequently adopts Dorward et al.'s (2009) rubric for groups that are 'hanging in', 'stepping up' or 'stepping out'. This is an ingenious aid to the operationalization of social differentiation as it points to concrete information that can be gathered in fieldwork. These categories also capture social differentiation as a dynamic process rather than simply a static location, a critique that is often levelled against class analyses. However, this heuristic device is limited; while it helps establish the direction of travel, as it were, of households in processes of differentiation, it rarely affords the opportunity to observe and understand the drivers or dynamics of that travel. Several papers in our sample exemplify this approach: Vicol (2019) conducted success ranking exercises with village focus groups, biographical interviews and household surveys to chart livelihood pathways among potato farmers in western India; Scoones et al. (2012, 2018) used similar methods to trace social differentiation among tobacco farmers in Zimbabwe. In these applications, studying differentiation is a means of understanding distributive outcomes that result in differences between groups of households. The exercise of assigning households to socio-economic strata offers a clear and practical operationalization tool, but risks obscuring power dynamics, structural constraints and inter-group relations. Neves and du Toit (2013) follow a somewhat different approach, although still located in the livelihoods framework, by providing vignettes of the life stories of research participants to examine how 'the rural poor' sustain themselves in increasingly complex ways in South Africa.

In contrast, authors taking a relational approach are primarily interested in understanding how structural constraints interact with the power struggles among different classes. Here, social differentiation is an entry point to gain insights into the functions, dynamics and drivers of these power struggles and it is these relations or their manifestations that must be made visible by the researcher. Frequently, class relations are postulated as the main drivers of social differentiation and are operationalized in both quantitative and qualitative ways (see below).

This is evident in work by Selwyn (2007) who was interested in tracing the impact of the rapid acceleration of agricultural export production on the balance of power between capital and labour in large-scale grape farms in northeastern Brazil. Selwyn uses concepts from labour process theory to analyze the sources of workers' bargaining power and to study how workers resist exploitation. The author delineates clearly what a relational approach entails (Selwyn, 2021) and discusses possible methods of enquiry: extensive farm visits, semi-structured and open-ended interviews with workers, managers, owners and other key respondents in the sector, participant observation and archival work. However, there is no explicit account of how questions in the conceptual framework about the labour process and workers' bargaining power were first put to the respondents and were later compiled as evidence to support the ensuing arguments. This type of fieldwork follows a less scripted and rigid methodology and opts instead for an open-ended, opportunistic enquiry where problems and questions are constantly defined and redefined as the observation unfolds.

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[6] Here we are referring broadly to the livelihoods approach and not to specific formulations such as the Sustainable Livelihoods Framework. See Scoones (2015) for a comprehensive reconstruction of the livelihoods approach.

Pattenden (2016) offers another example of a relational approach in work on class relations in rural South India. Using extensive household survey material, Pattenden operationalizes 'class' by stratifying respondents using a labour-exploitation index (more on this below). Pattenden then uses data collected in the surveys, semi-structured interviews and open-ended ethnographic methods to describe the different accumulation strategies and power relations that characterize the study region.

These examples suggest that different intellectual traditions with very different conceptualizations of social differentiation can end up undertaking similar exercises on the ground. Common to both stances is the attempt to observe processes that have diverging material outcomes and that are in motion. While papers on stratification are largely concerned with finding groups of households with similar living standards and common livelihood trajectories, relational papers focus on social relations and prioritize observing these relations over the study of individual household characteristics.

In practice, many agrarian studies of social differentiation combine elements of relational and stratification approaches. Authors interested in social relations often first stratify their sample into different groups and then set out to examine the nature of inter-group relationships and their outcomes (e.g. Illien et al., 2021; Pattenden, 2011). Across both traditions, there is a set of common indicators used to observe social differentiation. The following sections discuss the three most prominent dimensions of analysis in the papers reviewed: measures of material welfare, labour dynamics and class.

Observing social differentiation through measures of material welfare

Measures of material well-being are the most widely used form of data collection in fieldwork exercises interested in agrarian social differentiation. These measures can include anything from households' monetary income to asset ownership or patterns of output, expenditure and consumption (see for example Gray & Dowd-Uribe, 2013; Harriss-White et al., 2009).[7] The popularity of such measures owes to the fact that tangible dimensions are more readily observable and quantifiable than intangible welfare dimensions (and in some cases offer excellent proxies of the latter). But some of these indicators (e.g. asset ownership) are less susceptible than others (e.g. consumption) to recall and observer bias. Furthermore, while the use of a single indicator may have the advantage of securing consistency across the sample, it does so at the cost of more in-depth and detailed observation. The alternative – the combination of several indicators – has its own problems: there is no *a priori* correct way to weigh different dimensions and therefore proposed solutions are *ad hoc* and difficult to apply to other case studies (Shanin, 1977).[8]

The use of asset indices in particular seems to be gaining in popularity. In a nutshell, asset indices map a household's possessions and establish their socio-economic position in relation to other households in the sample (Sender, 2002). Indices have the advantage over income measures of being more adaptable to local contexts, verifiable and less subject to seasonal variations (Johnston & Abreu, 2016; Oya, 2015a).

The comparative analysis of household assets can indeed be helpful in identifying different social groups but requires a good alignment between the conceptualization of social differentiation adopted by

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[7] The literature on poverty uses similar indicators to understand patterns of deprivation (e.g. Ngo & Christiaensen, 2019; Salecker et al., 2020).

[8] These methodologies include the use of principal component analysis as well variations of the asset and labour indices presented below (e.g. Bhattacharyya, 2001; Cousins et al., 2018; Oya, 2004). An alternative solution is to use different qualitative criteria in combination by using quantitative cut-off points for each but without aggregating them into a single index. Blaikie et al. (2002) propose such a solution: they identified three production systems in the Nepalese agrarian economy: peasant, semi-feudal and capitalist. Each household was then allocated to one of these based on their key socio-economic characteristics in relation to social relations of production, relations to the market, use of surpluses and receipts of non-agricultural income. Quantitative cut-off points were used to distribute groups along the different production systems.

the researcher and the group of assets selected. Generally, the more the selected assets are locally-recognized as indicators of social differentiation, the more useful they are. In our sample, for example, Oya (2004) was concerned with identifying pockets of dynamic capitalist accumulation and created a possession score based on capital goods and instruments of production (such as tractors) to identify differences among middle- and large-scale farmers in Senegal. Erlebach (2006), concerned with identifying the poorest strata in the sample, opted for a set of assets that gave more prominence to consumer goods (e.g. cooking pots and blankets) to better reveal differentiation among poor rural households in Rwanda. Similarly, in research on ocean grabbing in Myanmar, Barbesgaard (2019) based his sampling on the ownership of strategic assets according to local economies (i.e. boats in the case of the fishing village) and appealed to village administrators to identify the interviewees.

Despite the usefulness of asset-based measures, some scholars in agrarian studies are critical of their use. On the one hand, researchers focusing on agrarian politics and identities may find asset measurements to be a shallow and unidimensional metric of social differentiation. On the other hand, there is also scepticism among researchers interested in materiality because asset measures, while informative about levels of income and accumulation, say little about the relations of production and consumption that enabled the acquisition of the observed assets. For example, land holding size can be a meaningful indicator of social differentiation in many settings. However, when used alone, it risks lumping together households with similar landholdings but very different scales of investment, capitalization or output (Oya, 2004; Patnaik, 1987). Furthermore, as the non-farm economy becomes more important, land ownership may further lose its relevance as the main indicator of social differentiation in some regions (Rigg, 2006).

Observing social differentiation through labour dynamics

There is increased attention to the study of labour dynamics as a way to understand processes of differentiation in agrarian change, probably linked to an awareness of the limitations of an analysis solely based on land distribution. Among the papers surveyed, we identified two different, if interconnected approaches to labour and differentiation: a group of authors with more relational leanings and authors using quantitative labour indicators to postulate social strata.

Labour dynamics readily lend themselves to thinking about intra- and inter-household relations and are thus used in relational approaches to trace drivers and mechanisms of exploitation and agrarian change. Examples of using labour dynamics to study social differentiation in our sample include Argent (1999) who analyzes the changes in the intensity and valorization of women's productive and reproductive labour in order to assess the position of family farms in the South Australian rural financial crisis of the late 1980s and early 1990s. Similarly, Mitrah and Vijayendra (1982) trace the evolution of the class of agricultural labourers to understand agrarian change and rural politics in Bihar, India, while Shah (2013) examines labour relations to assess the extent to which capitalist relations of production have developed in India.

More quantitative approaches to labour dynamics tend instead to use labour and employment indicators to stratify the population under study (see for example Mueller, 2011; Zhang, 2013; or Xu, 2017 who uses secondary data). A prominent tool for the quantification of labour relations is the 'labour-exploitation index' proposed by Patnaik (Patnaik, 1976, 1988). This is a measure of the labour mobilized by any given household that takes into account labour hired in, labour hired out and family labour used in the household's production. On the basis of the ensuing scores, households are grouped according to their ability to extract surplus from others or, conversely, their compulsion to sell their own labour power. This then suggests the possible emergence of different social classes, i.e. groups of households with a common 'location' in labour dynamics. In our sample, Mueller (2011) applied a simplified version of this index to identify classes of farmers in northeastern Tanzania based on their participation in labour and output markets (see also Akram-Lodhi, 1993; Oya, 2004).

However, there are some limitations to using labour days or similar variables to study social differentiation. These metrics are not always sensitive to the fluid nature of employment, to the contribution of off-farm wages and remittances or to intra-household power dynamics, all crucial dimensions in agrarian social formations. Indeed, the recognition of these limitations has been a point of departure for relational research (see for example Illien et al., 2021; Pattenden, 2016).

Using social differentiation to think about class

One of the main applications of analysis of social differentiation is as a foundation for the study of class formation. Bernstein's (2010, p. 22) formulation of a set of four questions to guide research on class relations has been a mainstay of class analysis in agrarian political economy. The actual questions – 'who owns what?' (social property relations), 'who does what?' (the social division of labour), 'who gets what?' (the social struggle over the fruits of labour), and 'what do they do with it?' (capital accumulation i.a.) – have been widely adopted and expanded in different directions (Ahmed et al., 2018; Barbesgaard, 2019; Ferguson & Li, 2018; Scoones, 2015). Bernstein's questions go a long way towards proposing concrete ways of translating the theoretical construct of class into agendas for field-based research and point to the crossroads between stratification and relational understandings of differentiation. However, too literal an application of the questions has led some researchers into simply counting what households own, do and get without realizing that the author rather intended to stress the ways that the local power balances, relations of property and production, as well as the social division of labour bring households and firms into interaction, contradiction and conflict. Furthermore, Bernstein's questions appeal to researchers to explore the processes that led to the formation of these social relations and their long-time implications for agrarian change (Bernstein, 2010).

For field-based studies, there is an important difference between settings where a class structure is clearly observable and settings where a lot of work has to be put into discerning and characterizing the prevailing social classes. In the first case, the class structure is established, observable and acknowledged by respondents (such as in large-scale units of production with full-time hired labour, where the polarity between agrarian capital and agrarian labour is self-evident, see for example Selwyn, 2007). In such settings, studying social differentiation may help understand how a given class structure is reproduced; what relations of domination and resistance shape the balance of power between capital and labour; and how broader social relations around gender, race and generation compound class conflicts, but it is not necessary to identify classes, as these are clear to begin with.

However, research about agrarian class relations frequently takes place in social formations where clear class distinctions are not easily observable, notably in settings where a large share of the population works on their own account or has some access to the means of production. Research on class dynamics in these locations often starts by attempting to ascertain what the predominant relations and groups involved in production and exchange are, or which groups occupy positions of capital and labour in the process of production. Here, tracing processes of social differentiation is central to identifying prevailing class relations. Increasingly, work in such agrarian formations adapts and deploys class categories – and frequently postulates new ones – in order to describe actually existing relations in ways that are relevant to a specific setting (e.g. Blaikie et al., 2002; Cousins et al., 1992; Illien et al., 2021; Mueller, 2011; Patnaik, 1987; Pérez Niño, 2016; Ramachandran et al., 2010), giving rise to the increasing use of class categories such as 'petty commodity producers' (i.e. households or individuals who combine the positions of capital and labour) and 'classes of labour' (e.g. Bernstein, 2010; Lerche, 2010).

Different quantitative methods can be used to identify class groupings. As mentioned above, measures of material welfare (asset ownership, labour mobilization, types of income) are frequently used,

but other indicators have also been proposed.[9] Analyzing the class structure in Kenya, Kitching (1980, p. 449) suggested examining modes of surplus appropriation in production and exchange, that is, 'the capacity of various strata to accumulate money in the form of capital'. Prota and Beresford (2012) use social network analysis to map out households' resource exchange patterns in order to identify class locations in rural southern Vietnam and Olofsson (2020) performed cluster analysis to group the surveyed farmers in northeastern South Africa according to similar socio-economic characteristics and to identify associated class positions.

Scholars adopting a relational approach frequently stress qualitative methods and historical analysis. In terms of fieldwork, this translates into interviews that focus less on discovering the characteristics pertaining to the individual household (e.g. property and labour inputs), instead exploring the relations that households are engaged in with other households, groups and individuals in the process of production, reproduction and resistance. Selwyn (2021, p. 107) refers to this as an 'experiential' approach i.e. a method that starts by identifying the prevailing class structure but then uses interviews, field observation and archival work to first incorporate a sense of how these structures are contested, reinforced and resisted; and then to analyze the contingent outcomes of such processes.

To conclude, this section has shown that, while stratification approaches in our sample of papers tend to use locally grounded markers of welfare to operationalize social differentiation, and relational approaches tend to focus on the relations resulting from differences in property and labour inputs as a core mechanism of exploitation, the distinction is fuzzy in practice as both perspectives tend to explore asset ownership, labour use and class positions.

Data collection methods

Having considered the operationalization of social differentiation in the previous section, we now look at a second step in the transition from theory to fieldwork: the selection of a methodological strategy, i.e. the planning and implementation of the activities that allow for the observation of the indicators chosen as possible indicators of differentiation. To reiterate, while operationalization consists in the translation of abstract concepts and theories into actual indicators or manifestations that can be directly observed (e.g. income, labour inputs, asset ownership), the design of a data collection strategy is instead concerned with the procedures and interactions that allow researchers to observe directly or indirectly these manifestations (e.g. focus groups, household surveys, satellite pictures). Operationalization refers to the sets of questions that will be asked in the field; the data collection strategy consists of choosing instruments of inquiry and finding and selecting the relevant respondents. Here, we trace how the papers in our sample translate their understanding of social differentiation into methodological strategies.

Perhaps with the exception of doctoral dissertations, work in agrarian studies seldom discusses methodological choices at length. However, analysis of the methodological choices in the papers of this sample found some commonalities: researchers make use of an array of fieldwork methods to work around the inherent limitations of studying social change without the possibility of conducting fieldwork and follow-up research over long periods. Many researchers face challenges of combining quantitative and qualitative methods while ensuring that the research methods chosen are both adapted to local conditions and able to yield evidence relevant to the debates they aim to contribute to.

Among the papers reviewed, no single methodology predominates in primary research about social differentiation. The papers in the sample deploy a panoply of possibilities (see table in annex): household (Gray & Dowd-Uribe, 2013; Mueller, 2011) and farmer surveys (Olofsson, 2020); semi-

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[9] Critical here is the definition of the unit of observation, e.g. farms, households, or individual, and the researcher's willingness to observe dynamics of property and production in interaction with other social determinations (gender, seniority, etc.) which may limit the adequacy of group interviews.

structured and in-depth interviews (Barbesgaard, 2019); focus groups (Carte et al., 2019) and community mapping exercises (Scoones et al., 2018); applications of ethnographic methods (Angeles & Hill, 2009) including oral histories (Knudsen, 2019), life stories and participant observation (Shah, 2013); archival research (Sugden et al., 2018). In addition, several of the papers reviewed combined a range of qualitative and quantitative methods: Cousins et al. (2018) complemented methods of direct observation such as interviews and life histories with quantitative data extracted from surveys and budget analysis; Shah (2013) combined a large household survey with granular ethnographic methods such as participant observation and in-depth interviews; Scoones et al. (2018) overlaid data from a household survey with exercises of 'participatory mapping' and 'success ranking'.

Despite this variation, there is a concentration around a subset of preferred methods: small- to medium-sized population-based household surveys and extended interviews (e.g. Gray & Dowd-Uribe, 2013; Mueller, 2011; Scoones et al., 2018; Snyder et al., 2019). The variety of sources is also reflected in units and scales of analysis, from work focussing on farms, like Roberts (1996) and Zhang's (2013) reconstruction of patterns of persistence and variation at the level of family farms; work on differentiation at the household level, like Barbesgaard's (2019) interest in meso-level processes of agrarian change, to work that contrasts specific actors or groups, like Oya's work (2004) on accumulation and dynamism among large- and mid-scale farmers. Surveys, interviews and databases allow for different levels of aggregation, while data from archives and documents is for the most part used in the reconstruction of processes pertaining to meso- and macro-dynamics of differentiation.

Most research on social differentiation is interested in tracing changes over time, but not all authors in this sample had the possibility to do long-term fieldwork or to conduct repeat or longitudinal surveys.[10] The cost and logistical demands of repeat surveys are frequently beyond the means of doctoral students and early career scholars. Some authors opted for short-term follow-up visits (Knudsen, 2019). Others adapted their methods to yield information about processes and change. For instance, Sudgen (2018) incorporated questions about the past and about changes over time into interviews and oral histories. Roberts (1996) and Argent (1999) used farm histories, farm surveys and extended interviews to trace intergenerational reproduction in their respective case studies in North America and South Australia. Survey questionnaires can also be used to reconstruct the 'productive biographies' of household members, i.e. the reconstruction of individual or household work and production trajectories. These give historical depth to cross-sectional studies, although relying on the recall capacity of respondents may introduce significant bias (Pérez Niño, 2014).

In terms of the combination of quantitative and qualitative methods, there appears to be a preference for the pairing of household surveys and qualitative interviews, but we found little explicit discussion about the integration of these 'core methods' with other forms of data gathering and triangulation. The way in which qualitative and quantitative data are integrated is central in epistemological debates around mixed-methods approaches: clear research questions and theoretical frameworks guide the choice and integration of different methods (Bergman, 2011).

The most insightful work in agrarian studies uses questions and measures that are congruent with local standards and meaningful to respondents. Fieldwork allows researchers to reveal diverse and concrete manifestations and no theoretical disposition should blind researchers to unexpected findings. The practical design of data collection tools is thus a careful balancing act between analytical requirements and local

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[10] A small number of papers actually had original data from different periods of time. A re-survey over two decades later allowed Blaikie et al. (2002) to ascertain that, contrary to expectations, the forms of production and the class structure of rural western Nepal have remained remarkably stable over the past 20 years. Similarly, Snyder et al. (2019) traces changes in production and asset ownership over two decades in northern Tanzania and in contrast finds significant livelihood changes, notably in relation to increased market participation and higher agricultural productivity. Finally, Neves and du Toit (2013, p. 96) conducted repeat visits over several years to give a 'strong longitudinal quality' to the life histories of the participants in their research on livelihoods and rural poverty in South Africa.

adaptation. Informality, seasonality, occupational multiplicity, i.e. the characteristics of agrarian societies in many low-income countries, make this a formidable challenge. For example, when conducting research on work, researchers will obtain different data depending on the way they formulate their questions, the reference periods they choose and who they interview in the household (see for example Arthi et al., 2018; Bardasi et al., 2011; Carletto et al., 2015; Desiere & Costa, 2019; Gaddis et al., 2021; Oya, 2015a).

Sampling

After translating a research question into indicators to observe during fieldwork and selecting appropriate data collection methods, researchers also need to decide how to identify and reach selected participants. The very conditions of conducting fieldwork in agrarian studies lend themselves to possible sampling bias. The papers in our sample illustrate the kind of problems that arise in sampling and some possible solutions.

Agrarian studies are predominantly conducted in rural areas with farms and households that are spatially scattered. This leads to sampling considerations that may be specific to this field. First, there is the logistical challenge of designing representative samples. Given the relatively high cost of reaching typically widely dispersed populations, sample sizes tend to be smaller than may be possible in areas where populations are more concentrated. Another consideration, particularly in the study of social differentiation, is the need to ensure that groups living at the margins, both spatially (e.g. hard-to-reach households in remote areas) and socially (groups at the extremes of differentiation, such as very wealthy and very precarious households), are not overlooked. Sampling exercises could miss these groups if researchers stick to easily accessible areas around transportation hubs and roads. For instance, Sugden et al. (2018) faced the challenge of designing a sampling strategy in a mountainous region in eastern Nepal with considerable agro-ecological variety and very small and scattered villages. The author opted for a strategy that accounted for socio-economic domains at upper, middle and lower altitudes. Conversely, in some cases certain areas and households cannot be included for a range of reasons, and researchers need to work around such limitations. Harriss-White et al. (2009) conducted research on the socio-economic and ecological conditions in Arunachal Pradesh but excluded the easternmost districts of the state which could not be researched for security and practical reasons.

Researchers need to ensure sampling will yield information relevant to their research questions. Vicol (2019), studying the impact of contract farming, used past and present participation in contract farming as a sampling criterion; Mueller (2011), who was interested in long-term social differentiation, selected a set of villages ranging from prosperous to very poor to capture the full array.

Most papers in our sample conducted research with farming households. Nevertheless, authors were aware of the risk of missing key economic actors such as community leaders, lenders, traders, corporations and state officials. In recognition of the limitations of household-based research, triangulation with other types of respondents is used by many authors (Ahmed et al., 2018; Carte et al., 2019; Shah, 2013; Snyder et al., 2019). Many sampling exercises start off from official village registers and lists of inhabitants that tend to be poor at capturing the forms of mobility and migration that are prevalent in many rural areas, leading some authors to complement or construct sampling frames from scratch (e.g. Belton, 2016). Lastly, essentialist understandings of the household have given way to more critical conceptualizations and definitions that have demonstrated that households are not units with shared interests and instead unpack intra-household gender and generational power relations (Guyer & Peters, 1987; Kandiyoti, 1999; O'Laughlin, 2014; Oya, 2015b).

… and back again

In the same way that theory informs the scope and means of research, empirical data, once collected, have to be put back into conversation with theory to develop an analysis. In practice, data collection and analysis are iterative and not separate stages of research. It is, however, useful to distinguish them here for the sake of exposition. This section discusses the analytical methods used by authors of papers reviewed here and the innovative ways in which many authors have worked around the limitations they encountered in the collected data.

Data analysis methods

Fieldwork in agrarian studies is typically undertaken by the researchers themselves, often in collaboration with research assistants, interpreters or trained enumerators in the case of larger household surveys. Data analysis starts with the act of conducting interviews and gathering data and continues as researchers triangulate information; try different questions and approaches; pick up on themes and regularities; make field notes and organize them. Researchers that implement surveys go through an intermediary stage of data cleaning and tabulation before continuing to statistical analysis. Ideally, researchers will keep records of the choices and methods employed during data analysis, including how they dealt with missing data or how they accounted for information that clashed with their expectations. Unfortunately, scholarship on agrarian social differentiation is rarely explicit about the problems encountered in this stage, and the papers in our sample are no exception.[11]

Actual data analysis in the study of social differentiation depends on the researchers' choice of methods, as detailed in part three. When it comes to data collected during fieldwork, there is a broad distinction between data that is more structured and representative (such as data from household or farm surveys) and data like that resulting from interviews, archival work and field notes, which is more organic, in-depth and open-ended. In practice, most studies attempt to draw connections and combine both types of data when tracing processes of social differentiation (e.g. Cousins et al., 2018; Illien et al., 2021; Pattenden, 2016). During the analysis stage, micro-level evidence is assessed against the background provided by research into the social, political and economic context, and also examined and connected to questions raised in the theoretical and conceptual frameworks used. The onus of analysis, then, typically remains with the researcher. Here again, (reverse) operationalization is crucial because data that has been summarized and synthesized does not, on its own, contribute to understanding processes of differentiation. Instead, there is an intermediate stage in which the insights stemming from fieldwork data are used to interrogate, problematize or contribute to explanations and conceptualizations in the literature on agrarian social differentiation.

Turning again to our sample of papers, Gray and Dowd-Uribe (2013) exemplify how the analysis stage can yield important insights. In this case, data on cotton price fluctuation in southwestern Burkina Faso was collected separately from survey data on household landholdings and levels of indebtedness. The combination of these different types of evidence at the analysis stage led the researchers to the core insight that a crisis that was specific to smaller farmers in 2006 had spread to large farmers by 2007. In contrast, Roberts (1996) and Argent (1999) provide good examples of mixed methods approaches to embedding empirical data in their historical and regional context in order to understand the survival strategies of family farms in North America and South Australia respectively. Similarly, Carte et al. (2019) used qualitative and quantitative data in iteration: field notes from interviews and observation were used to generate theses that could then be tested against the large quantitative database of a household survey. The

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[11] For a discussion of possible problems emerging during fieldwork see for example Cramer et al. (2016).

authors used the results that emerged from this triangulation to identify other relations that could be coded and explored in further rounds of interviews and focus groups.

Research on social differentiation frequently uses typologies as a way to synthesize data and to present analysis. In addition to the livelihood typologies discussed above, other examples of typologies are helpful when analyzing differentiation. Zhang (2013) constructed a typology that grouped farming households in representative localities in rural China according to their relation to produce markets (whether direct or mediated by a third party) and their ability to hire wage workers. In such an application, the exercise of operationalization is laid bare: a conceptualization of differentiation grounded in commodification and labour relations allows Zhang to propose that specific local political economies and degrees of market access (rather than the intrinsic characteristics of family and commercial farming) determine whether family farming can remain competitive as capital penetrates further into agriculture.

Other insightful examples of the use of typologies in the sample included Mitra and Vijayendra (1982) and Shah (2013), who constructed typologies based on the labour relations prevailing in rural India; Roberts (1996), who stratified farms according to their access to irrigation; and Harriss-White et al. (2009), who proposed a typology of villages according to their different pathways of agrarian change. However, while typologies are a useful heuristic aide, using them risks making social groups appear as fixed and static. Many authors using typologies rightly take care to emphasize the tensions and dynamics that lie underneath these groupings or to make clear that the stratification captured is only a snapshot of a process in motion. We have argued in this paper for research practices that are more cognizant of the limitations of typologies and strata (in that they tend to be static, reifying and unidimensional). Undoubtedly, both typologies and strata can be remarkably useful for data analysis, but we advocate here for using them as aids for the study of the relations that constitute and reshape these group differences, rather than as a research insight in and of themselves.

Comparisons across time and space

Part three explained that longitudinal research is rare in agrarian studies and, even when possible, fieldwork methods are not always appropriate to engage with the longue durée. In the previous section, we identified ways in which the papers reviewed here designed their research methodology with this limitation in mind. Here we will describe ways in which papers explored the historical and dynamic dimensions of their data during analysis.

Research on social differentiation in agrarian studies is concerned with processes that unfold over time. For Gray and Dowd-Uribe (2013, p. 687), '[l]ong-term rural surveys and ethnographic work offer the best way to identify the micro-processes driving agrarian transitions' and Li (2001) observed that things that appear random at the household level are often part of patterns both over time and at the aggregate level. Conducting fieldwork in a manner that is sensitive to tracing societal change does not merely give depth to the ensuing analysis, but in some instances prevents blunders: at the heart of the Kenyan Agrarian Debate about the emergence of a so-called middle peasantry there were scholars claiming that a levelling of the peasantry was taking place, and others proposing a process of social differentiation. The first group's limited analysis based on cross-sectional data ultimately proved to be erroneous: '[b]y freezing rural society at a particular moment, analysis can hide as much as it reveals' (Orvis, 1993, p. 23).

Comparative analysis has been deployed to discern temporal trends in social differentiation. Commonalities and differences across groups may provide hints as to the relations and processes that led to past differentiation and those that keep reproducing and transforming it. For example, Scoones et al. (2018) use a cross-group comparison, among others, to produce a typology of emerging groups and highlight the key drivers of social differentiation in dynamic terms. Of course, another way of embedding snapshot data in a temporal dimension is to incorporate historical documents and archival data to reconstruct context and

trajectories at the stage of analysis. This would include, for instance, the consideration of previous studies conducted in the same area (see for example Mueller, 2011).

Finally, case studies can be analyzed in regional and global context, linking local manifestations and actors to wider processes and patterns. In some instances then, agrarian social formations serve as an entry point to study wider social processes. Solo de Zaldívar (2015), for example, uses evidence from fieldwork in Ecuador's central sierra to analyze rural collective action from the micro space that serves as an emblematic case study to understand wider regional and national processes of agrarian change from below.

More explicitly, Burawoy (1998, p. 19 italics in original) used the 'extended case method' in which cases are compared to '[trace] *the source of small differences to external forces'*. The study of these variations contributes to connecting the micro-scale of the cases with the macro-scale of structures and processes. This reflexive approach contrasts with what Burawoy calls segregative or horizontal approaches where common patterns are sought among diverse and presumably independent cases. Therefore, '[i]nstead of reducing cases to instances of a general law, [the extended case method makes] each case work in its connection to other cases' (Burawoy, 1998, p. 19).

Each of the analytical solutions presented here has its own pitfalls. Comparative studies are the gold standard of social research but present considerable methodological challenges, not least the need to compare data sets and sources that are not always compatible. Being aware of these limitations and working with them helps researchers deploy the methods of analysis that are best suited to the available data and serve their ultimate research questions.

Concluding Remarks

This paper examined how debates about social differentiation in agrarian studies have been translated into fieldwork practices. To accomplish this, we conducted a survey of fieldwork-based research on social differentiation. Two approaches were identified, a more data-driven stratification approach observing differences in households' material welfare, and a more theory-driven relational approach that emphasises exploitative dynamics in intra- and inter-household relations of production, reproduction and exchange.

In practice, the boundaries between these two approaches are fuzzy and many researchers combine elements of both, frequently first identifying possible groupings through quantitative measures of stratification before analyzing the relations between these groups themselves through in-depth interviews. This syncretism is a welcome development: the most widely used measures of material welfare provide valuable information about households and individuals but can neither account for the differences between households nor shed light on the nature of the relations between them. Tools to observe labour and class relations directly can overcome some of these limitations but there is little discussion in the literature about their methodological application to the study of agrarian social differentiation.

Despite intense debates and conceptual development in agrarian studies, a discussion of the methodological implications of new conceptualizations has rarely followed suit. Conversely, we have shown that researchers are creative and eclectic when studying social differentiation in fieldwork, and that while they regularly discuss the methods employed (see annex), they seldom reflect systematically about their operationalization strategies. In general, there remains a conceptual and methodological gap in that fieldwork activities tend to concentrate on the study of discrete households and there have been very limited methodological discussions on how to observe and study relations in a more direct manner.

Given the limitations that our review found in the stratification approach, and the promising developments in the relational literature, we suggest that a 'relational shift' in the study of social differentiation can offer a way out of the impasse identified above in order to move beyond rigid classifications and the measurement of social differentiation as an end in itself. In contrast to a stratification approach, a 'relational shift' would allow for the 'denaturalization of social differentiation'.

By this, we mean an approach to social differentiation as a historical and contingent process, i.e. an approach that rejects treating the existence of given socio-economic groups as inherent or as a given. The emergence of social groups is neither inevitable nor functional to capital but a social construction based on systemic tendencies in interaction with local histories, ecologies and societies. Even though material conditions inform these processes and give rise to underlying tendencies, households with a given set of characteristics are not *a priori* a group in a social vacuum but only emerge as a group as a consequence of interactions with other households and actors. A mechanistic reading would miss the ways in which group relations are thus co-constructed, resisted or transformed and why they take different forms in different settings. In short, social groupings cannot be directly read from the distribution of assets and labour power (i.e. what households have and do). Instead, the relevance of studying asset distribution and labour use lies in being able to observe through these relations how households interact, what relations they enter into and on what terms, and which social groups emerge from these interactions.

It is thus claimed that a relational lens can incorporate the influx of historical and political processes (both at micro and macro levels) on the patterns of differentiation in ways that an asset-centric approach cannot. The stratification approach, which provides a systematic snapshot of a representative sample of households, however, becomes too blunt a tool when applied to analyzing processes that cannot be traced to the immediate characteristics of individual households or clusters of households. If enquiry into social differentiation focuses its attention on social relations rather than on household characteristics, these same households can be situated in a richer and more complex web of coordinates, not limited to the unidimensional metric of asset ownership.

On a similar note, analysis of social differentiation that has relations at the centre is better suited to recognize how socio-economic relations intersect with similarly determinant social structures such as gender, kinship, seniority, caste, race and ethnicity. The stratification of households according to discrete variables can measure the socio-economic outcomes of these intersections but cannot discern the character of such interactions.

Two concrete challenges arise from the adoption of a relational approach. First there is the question of which subset of relations within the myriad of linkages between and within households is the subject of a relational approach to social differentiation. Social differentiation refers to the social and economic processes involved in social relations of property, production, reproduction, consumption, accumulation and exchange. If indeed, one advantage of the relational approach is that it allows for the observation of these relations in interaction with other social systems, this need not lead to the analytical collapse of what is specifically the remit of agrarian socio-economic differentiation, i.e. labour, land, property, production and exchange. The second challenge pertains to finding ways to integrate different scales of analysis both during fieldwork and for data analysis. This is a persistent conundrum, as relations are nested in very different scales and finding analytical tools that can operate across these scales is not straightforward (see discussions in Burawoy, 1998; Campling et al., 2016).

Despite growing interest in relational approaches, our survey of the relational literature – both conceptual and applied – did not find guidance on possible ways to operationalize the questions raised by this approach when designing fieldwork. Based on a survey of empirical papers engaging with agrarian social differentiation, this paper identified possibilities and challenges facing researchers on social differentiation and concluded that there is a need to discuss and debate the connection between, on the one hand, concepts and research questions in the relational approach specifically and, on the other hand, fieldwork design and data analysis.

More concretely we suggest that the research methods currently used to characterize households (mainly, but not limited to, household surveys and interviews about household characteristics) have limitations as tools for the observation of social relations. Acknowledging such limitations does not amount to advocating for abandoning these methods, but on the contrary, it has been argued here that the systematic observation of household characteristics is in fact the starting point for the enquiry about inter

and intra-household relations. What is proposed, however, is to use such characterization as a stepping stone for analysis that has relations at the centre, rather than treating the identification of strata as an end in and of itself. In order to shift the focus of research from household characteristics (assets, incomes, activities) to inter-household and social relations (of production, exchange and social reproduction), fieldwork exercises could more explicitly:

- **Enquire specifically about the relations in which households participate:** include questions about relevant socio-economic relations in questionnaires about household characteristics; conduct exploratory research to determine which are the key relations in which the household participates and to characterize them. Researchers could ask about the antecedents and context of these relations; reasons for engaging; how households or respondents experience them; barriers and limitations encountered by households; other actors involved in interactions; conflicts and resistance or resolution; influence of household characteristics on relations with other households and actors; changes in relationships over time, etc.
- **Triangulate sources of information and methods:** use research methods in combination to tease out relational dimensions from household accounts. E,g. complement survey data with exploratory interviews, life stories, focus groups; contrast household-based evidence with documentary data (archival data, secondary sources, panel data); observe the material manifestations of the relations studied, both interpersonal (employment relations) and impersonal (market relations); whenever possible interview different parties in these relations (landholders, landlords, sharecroppers; paid and unpaid workers and employers; sellers, traders, lenders; different household members; firms and local authorities).
- **Link evidence on social relations to relevant debates about agrarian change:** describe and characterize social relations; trace how these relations create, maintain, reverse or reshape processes of social differentiation; use these insights to dialogue with, and to feed back to, conceptual developments on the process of social differentiation and agrarian change.

Importantly, the dialogue between theory and field-based activities continues throughout the whole research process. The intermediary steps, i.e. the operationalization of abstract concepts and research questions into research design, as well as linking empirical observations back to theoretical debates through analysis, are at the heart of research. There is no straightforward way of doing this, but this review has shown the creative solutions deployed by the authors in our sample. The nature of social differentiation sets a high bar for empirical evidence needed to substantiate claims about this process. An open dialogue about methodological challenges and constructive solutions will benefit researchers and advance the field of agrarian studies.

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Shanin, T. (1977). Measuring Peasant Capitalism: Russia's 1920s and India's 1970s. *Economic and Political Weekly*, *12*(47), 1939–1948.

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Annex: list of reviewed articles

#	Paper	Region	Methods used	Methodological discussion of fieldwork
1	Ahmed, A., Kuusaana, E. D., & Gasparatos, A. (2018). The role of chiefs in large-scale land acquisitions for jatropha production in Ghana: Insights from agrarian political economy. *Land Use Policy, 75*, 570–582. https://doi.org/10.1016/j.landusepol.2018.04.033	Ghana	• Expert interviews • Household surveys • Analysis of policy documents and grey literature	Yes*
2	Angeles, L. C., & Hill, K. (2009). The gender dimension of the agrarian transition: Women, men and livelihood diversification in two peri-urban farming communities in the Philippines. *Gender, Place & Culture, 16*(5), 609–629. https://doi.org/10.1080/09663690903148465	Philippines	• Ethnography • In-depth interviews • Focus groups • Field notes • Livelihood journals • Policy analysis	Yes
3	Argent, N. (1999). Inside the black box: Dimensions of gender, generation and scale in the Australian rural restructuring process. *Journal of Rural Studies, 15*(1), 1–15. https://doi.org/10.1016/S0743-0167(98)00044-8	South Australia	• Farm family survey • Extended interviews	Yes*
4	Ayelazuno, J. A. (2019). Water and land investment in the "overseas" of Northern Ghana: The land question, agrarian change, and development implications. *Land Use Policy, 81*, 915–928. https://doi.org/10.1016/j.landusepol.2017.06.027	Northern Ghana	• Focus group discussions • Internet search • Document analysis • Key informant interviews • Non-participant observation	Yes
5	Baglioni, E. (2018). Labour control and the labour question in global production networks: Exploitation and disciplining in Senegalese export horticulture. *Journal of Economic Geography, 18*(1), 111–137. https://doi.org/10.1093/jeg/lbx013	Senegal	• Semi-structured interviews • Data	Yes
6	Barbesgaard, M. (2019). Ocean and land control-grabbing: The political economy of landscape transformation in Northern Tanintharyi, Myanmar.	Southern Myanmar	• Semi-structured and key informant interviews	Yes

#	Reference	Location	Methods	
7	*Journal of Rural Studies, 69*, 195–203. https://doi.org/10.1016/j.jrurstud.2019.01.014 Belton, B. (2016). Shrimp, prawn and the political economy of social wellbeing in rural Bangladesh. *Journal of Rural Studies, 45*, 230–242. https://doi.org/10.1016/j.jrurstud.2016.03.014	South-western Bangladesh	• Household survey including census of all households in each community • Semi-structured and unstructured interviews	Yes*
8	Blaikie, P., Cameron, J., & Seddon, D. (2002). Understanding 20 Years of Change in West-Central Nepal: Continuity and Change in Lives and Ideas. *World Development, 30*(7), 1255–1270.	Western Nepal	• Re-survey of households • Participatory rural appraisal and rapid rural appraisal methods such as timelines, wealth rankings, seasonal calendars, mobility maps and household and life histories.	Yes*
9	Carte, L., Schmook, B., Radel, C., & Johnson, R. (2019). The Slow Displacement of Smallholder Farming Families: Land, Hunger, and Labor Migration in Nicaragua and Guatemala. *Land, 8*(6), 89. https://doi.org/10.3390/land8060089	Nicaragua and Guatemala	• In-depth interviews • Focus groups • Survey	Yes*
10	Cousins, B., Dubb, A., Hornby, D., & Mtero, F. (2018). Social reproduction of 'classes of labour' in the rural areas of South Africa: Contradictions and contestations. *The Journal of Peasant Studies, 45*(5–6), 1060–1085. https://doi.org/10.1080/03066150.2018.1482876	Eastern South Africa	• In-depth interviews • Life histories • Direct observation • Enterprise budgets • Household surveys	No
11	Gray, L., & Dowd-Uribe, B. (2013). A political ecology of socio-economic differentiation: Debt, inputs and liberalization reforms in southwestern Burkina Faso. *Journal of Peasant Studies, 40*(4), 683–702. https://doi.org/10.1080/03066150.2013.824425	South-western Burkina Faso	• Household survey • Informant interviews • Records of producer groups	Yes
12	Harriss-White, B., Mishra, D. K., & Upadhyay, V. (2009). Institutional Diversity and Capitalist Transition: The Political Economy of Agrarian Change	North-eastern India	• Semi-structured interview	Yes

#	Reference	Location	Methods	
13	in Arunachal Pradesh, India. *Journal of Agrarian Change, 9*(4), 512–547. https://doi.org/10.1111/j.1471-0366.2009.00230.x			
	Illien, P., Pérez Niño, H., & Bieri, S. (2021). Agrarian class relations in Rwanda: A labour-centred perspective. *The Journal of Peasant Studies, 0*(0), 1–26. https://doi.org/10.1080/03066150.2021.1923008	Western Rwanda	• Household survey • Semi-structured interviews • In-depth interviews • Life stories • Participatory observation	Yes
14	Kea, P. (2004). Maintaining difference and managing change: Female agrarian clientelist relations in a Gambian community. *Africa, 74*(3), 361–382.	The Gambia	• Interviews • Life histories	No
15	Knudsen, M. (2019). Agrarian transition in the southern Philippines: More than poverty, dispossession, and violence. *Critical Asian Studies, 51*(2), 232–252. https://doi.org/10.1080/14672715.2019.1571427	Southern Philippines	• Repeated field trips and ethnographic fieldwork • Oral history • Community mapping	Yes
16	Martin, N. (2009). The political economy of bonded labour in the Pakistani Punjab. *Contributions to Indian Sociology, 43*(1), 35–59. https://doi.org/10.1177/006996670904300102	Pakistan	• Unspecified	No
17	Mitra, M., & Vijayendra, T. (1982). Agricultural labourers and peasant politics: Rural proletarianisation in Purnea, Bihar. *The Journal of Peasant Studies, 9*(3), 88–118. https://doi.org/10.1080/03066158208438174	Eastern India	• Household survey	No
18	Mueller, B. E. T. (2011). The agrarian question in Tanzania: Using new evidence to reconcile an old debate. *Review of African Political Economy, 38*(127), 23–42. https://doi.org/10.1080/03056244.2011.552589	Northeastern Tanzania	• Household survey • Semi-structured interviews • Focus groups	Yes
19	Murray Li, T. (2002). Local Histories, Global Markets: Cocoa and Class in Upland Sulawesi. *Development and Change, 33*(3), 415–437. https://doi.org/10.1111/1467-7660.00261	Indonesia	• Ethnography	No
20	Neves, D., & du Toit, A. (2013). Rural Livelihoods in South Africa: Complexity, Vulnerability and Differentiation. *Journal of Agrarian Change, 13*(1), 93–115. https://doi.org/10.1111/joac.12009	South Africa	• In-depth interviews • Life histories • Observation	Yes

#	Reference	Location	Methods	
21	Olofsson, M. (2020). Socio-economic differentiation from a class-analytic perspective: The case of smallholder tree-crop farmers in Limpopo, South Africa. *Journal of Agrarian Change, 20*(1), 37–59. https://doi.org/10.1111/joac.12335	North-eastern South Africa	• Farmer survey • Cluster analysis • In-depth interviews	Yes
22	Oya, C. (2004). The Empirical Investigation of Rural Class Formation: Methodological Issues in a Study of Large- and Mid-Scale Farmers in Senegal. *Historical Materialism, 12*(4), 289–326. https://doi.org/10.1163/1569206043505167	Senegal	• Survey of large- and mid-scale farmers and seasonal workers • Semi-structured and open-ended interviews • Life histories • Field observation	Yes*
23	Pattenden, J. (2011). Gatekeeping as Accumulation and Domination: Decentralization and Class Relations in Rural South India. *Journal of Agrarian Change, 11*(2), 164–194. https://doi.org/10.1111/j.1471-0366.2010.00300.x	South India	• Semi-structured interviews • Unstructured discussions • Participant observation • Household survey • Document analysis	Yes*
24	Pérez Niño, H. (2016). Class dynamics in contract farming: The case of tobacco production in Mozambique. *Third World Quarterly, 37*(10), 1787–1808. https://doi.org/10.1080/01436597.2016.1180956	Central Mozambique	• Household survey • Interviews • Archival work	Yes
25	Roberts, R. (1996). Recasting the 'Agrarian Question': The reproduction of family farming in the Southern High Plains. *Economic Geography, 72*(4), 398–415.	Southern USA	• Farm survey • Farm histories	Yes
26	Scoones, I., Marongwe, N., Mavedzenge, B., Murimbarimba, F., Mahenehene, J., & Sukume, C. (2012). Livelihoods after Land Reform in Zimbabwe: Understanding Processes of Rural Differentiation. *Journal of Agrarian Change, 12*(4), 503–527. https://doi.org/10.1111/j.1471-0366.2012.00358.x	South-eastern Zimbabwe	• Household census and survey • Household ranking • Biographical interview	Yes*
27	Scoones, I., Mavedzenge, B., Murimbarimba, F., & Sukume, C. (2018). Tobacco, contract farming, and agrarian change in Zimbabwe. *Journal of Agrarian Change, 18*(1), 22–42. https://doi.org/10.1111/joac.12210	Northern Zimbabwe	• Household survey • Informal interviews • Participatory farm mapping • Individual and household biographies	Yes*

#	Reference	Location	Methods	
28	Shah, A. (2013). The Agrarian Question in a Maoist Guerrilla Zone: Land, Labour and Capital in the Forests and Hills of Jharkhand, India. *Journal of Agrarian Change, 13*(3), 424–450. https://doi.org/10.1111/joac.12027	North-eastern India	• Participant observation • Success ranking • Ethnography including participant observation, unstructured interviews, life histories and archival work • Household survey	Yes
29	Snyder, K. A., Sulle, E., Massay, D. A., Petro, A., Qamara, P., & Brockington, D. (2019). "Modern" farming and the transformation of livelihoods in rural Tanzania. *Agriculture and Human Values, 37*(1), 33–46. https://doi.org/10.1007/s10460-019-09967-6	Northern Tanzania	• Repeated household survey • Focus groups • Interviews	Yes
30	Solo De Zaldívar, V. B. (2015). Tempest in the Andes? Part 1: Agrarian Reform and Peasant Differentiation in Cotopaxi (Ecuador). *Journal of Agrarian Change, 15*(1), 89–115. https://doi.org/10.1111/joac.12072	Central Ecuador	• Formal and informal interviews • Observations • Archival research	No
31	Sugden, F., Seddon, D., & Raut, M. (2018). Mapping historical and contemporary agrarian transformations and capitalist infiltration in a complex upland environment: A case from eastern Nepal. *Journal of Agrarian Change, 18*(2), 444–472. https://doi.org/10.1111/joac.12223	Eastern Nepal	• Household interviews • Focus groups • Archival research	Yes
32	Vicol, M. (2019). Potatoes, Petty Commodity Producers and Livelihoods: Contract farming and agrarian change in Maharashtra, India. *Journal of Agrarian Change, 19*(1), 135–161. https://doi.org/10.1111/joac.12273	Western India	• Semi-structured household interviews • Success ranking with focus groups • Observations	Yes*
33	Vicol, M., Neilson, J., Hartatri, D. F. S., & Cooper, P. (2018). Upgrading for whom? Relationship coffee, value chain interventions and rural development in Indonesia. *World Development, 110*, 26–37. https://doi.org/10.1016/j.worlddev.2018.05.020	Indonesia	• Ethnography • Key informant interviews • Household surveys	Yes
34	Vorbrugg, A. (2019). Not About Land, Not Quite a Grab: Dispersed Dispossession in Rural Russia. *Antipode, 51*(3), 1011–1031. https://doi.org/10.1111/anti.12523	Russia	• Participant research • Interviews • Field notes	No

| 35 | Zhang, Q. F. (2013). Comparing Local Models of Agrarian Transition in China. *Rural China, 10*(1), 5–35. https://doi.org/10.1163/22136746-12341235 | China | • Unspecified | No |

* More detailed discussion

Paper IV: Agrarian class relations in Rwanda: a labour-centred perspective

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Journal: The Journal of Peasant Studies

Status: This is the version of record of an article published by Taylor & Francis in The Journal of Peasant Studies on 29.06.2021, available online:
https://www.tandfonline.com/doi/full/10.1080/03066150.2021.1923008?scroll=top&needAccess=true

Routledge
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Agrarian class relations in Rwanda: a labour-centred perspective

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ABSTRACT

This paper explores the organization of production in Rwanda's main coffee producing zone. Most rural households in the region have limited access to land and stable employment. Yet, while differences in property and employment appear small from afar, this paper shows why they are consequential: even when marginal, these differences interact with time and market pressures (e.g. relative dependence on household food production or need for cash) that shape the complex and gendered labour relations between and within generally land-poor households. In a context of heightened precarity, such a labour-centred approach helps chart the prevailing trajectories of accumulation and exploitation.

Introduction

After the 1994 genocide, Rwanda experienced a remarkable economic recovery with annual GDP per capita growth averaging 4.6 percent between 1999 and 2019 (World Bank 2020). The country went from having a largely agriculture-based economy (32 percent value added of GDP in 1999) to a more diversified structure that still benefits from the agricultural sector's stable contributions to domestic product (24 percent in 2019) and employment (62 percent in 2019, World Bank 2020). In recent years, Rwanda's agricultural sector has been significantly transformed with a green-revolution-style modernization package including a new land law and a market-oriented crop intensification programme (CIP).[1]

While the official discourse highlights productivity gains and other improvements at the macro level, a significant subset of scholars portrays a more nuanced picture and

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[1]These interventions have received considerable attention, specifically regarding entry barriers, opportunities and differentiated impacts (Ansoms 2008; Ansoms et al. 2018; Huggins 2017). Dawson, Martin, and Sikor (2016) argue that these policies have heightened food insecurity and inequality in western Rwanda by dismantling traditional agricultural systems and privileging wealthier households. These findings are corroborated by Cioffo, Ansoms, and Murison (2016) using data from Northern Province.

calls for investigations of the 'lived experiences on the ground' (Ansoms et al. 2018, 1). These more granular contributions have substantially advanced our understanding of Rwanda's agrarian change. However, most have focused on land issues, livelihoods in general or the specific impacts of policy interventions. A bottom-up perspective on rural labour relations and agrarian class dynamics has been largely missing. This paper aims to fill that gap using survey and qualitative fieldwork data from Nyamasheke district – Rwanda's main coffee producing region. Our contribution thereby contributes to the argument more recently put forward that there is a vibrancy in African rural labour markets that has been often overlooked by scholars.[2]

By focusing on labour and class relations, we identify important variations among similarly land-poor households with consequences for their experiences of agrarian change. Although nested in global relations of exploitation, these relations are reproduced locally on the basis of exploitative interactions exemplified in what Mike Davis (2006, 181) calls 'relentless micro-capitalism'. Our contribution, grounded in the accounts of rural workers-cum-producers, herewith follows Newbury and Newbury's (2000, 868) call to '[bring] the peasants back in' to Rwandan studies.

As in many parts of the world (see for example Hart, Turton, and White 1989), decades of export commodity production and pressure over land have not resulted in a clean polarization between groups of landowners and groups of rural proletarians in Nyamasheke. The vast majority of the population has access to some land for agricultural production (over 90 percent of households in our sample, with an average landholding of 0.29 ha per household) but, importantly, also depends on casual agricultural wage employment for their social reproduction – making an analysis of rural labour markets indispensable. This paper aims to understand how property and labour relations reveal marked forms of differentiation and power relations in a context of no prominent class polarization.

By using a class-relational approach, this paper examines different trajectories of accumulation and exploitation and makes sense of the production relations in which households take part (Campling et al. 2016). The article focuses on forms of surplus value extraction and the power relations that mediate them. We start by outlining our research design and data collection process. The second part introduces land relations and coffee production in Nyamasheke, providing a baseline against which to examine the diverse work engagements of our respondents. The third section presents labour relations as a way to observe and analyse class and applies a quantitative tool developed by Patnaik (1976; 1987) to observe class positions in Nyamasheke. While useful, this approach is insufficient to account for the multidimensional and dynamic nature of classes. Therefore, in section four, we adopt a relational approach to instead examine the drivers, functions and power relations underlying the prevailing forms of surplus value extraction in Nyamasheke: wage labour, sharecropping and cattle-sharing. The final section argues that although peoples' experience of surplus extraction is predominately shaped by their access to land, their labour relations are significant in two ways. First, in a temporal way: time matters because labour mobilization is predicated on the relative urgency of some households to get access to food or cash. Second, in relation

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[2]Oya (2013) shows how rural labour markets have been notoriously underreported in much of sub-Saharan Africa; Van den Broeck and Kilic (2019) provide evidence of widespread rural off-farm employment across a range of African countries using national panel household surveys; and Oya and Pontara (2015a) present a selection of case studies that underline the diversity and dynamism of rural wage employment.

to commodification pressures: markets matter because labour mobilization depends on the different market compulsions that households experience and the different markets they participate in as a result. The relative lack of access to means of production or stable employment presents structural limits to a household's reproduction strategy. What our case study shows, though, is that these structural conditions, especially in contexts of no sharp polarization, are mediated at the household level predominantly in the form of time pressures and market compulsions. Temporality and commodification are thus crucial to understanding the tensions of localized micro-capitalism.

Research design and data collection

Fieldwork for this paper, conducted between October 2018 and March 2019, used a mixed-methods approach to observe class relations at the village level. Nyamasheke district, located in Western Province, was purposely selected because it is the main coffee producing region of Rwanda (NISR 2012; Migambi 2014). Compared with other rural areas of Rwanda, Western Province has the smallest average of cultivated land per farming household (NISR 2012), partially linked to its mountainous terrain and lake access. But as in most farming regions of Rwanda, smallholder farmers end up having to combine food production for own consumption, commodity production and wage employment (Bigler et al. 2017).

Fieldwork consisted of an extensive household survey and several qualitative data collection methods. The sampling strategy for the survey was as follows: we purposely selected two dynamic coffee-producing sectors in Nyamasheke and two sectors where previous research had been conducted (Erlebach 2006). In each sector, two villages and then a number of households proportional to the size of the village were selected using systematic random sampling. This resulted in a sample of 233 households across eight villages. The questionnaire asked about a wide array of household and individual characteristics with a focus on work and land relations. As rural labour markets are difficult to capture, we implemented a number of measures to ensure that the extent and diversity of wage employment were captured in our sample (Oya 2015a), such as the enumeration of all relevant economic activities (as opposed to focusing on the main occupation only) and the inclusion of any type of compensation – whether in kind or in cash and for whatever time period.

We also conducted qualitative fieldwork in three of the surveyed villages that exemplified different socio-ecological conditions. This included interviews with key informants, such as coffee washing station managers and village leaders; participatory observation; thirty in-depth interviews and three life stories. Household interviews were conducted with wives and husbands when possible and with the household head in the case of single-headed households.[3] Respondents were purposively selected from surveyed households to represent the most land-poor and land-rich households. The second round included six repeat interviews as well as the three life story interviews.

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[3]Although female-headed households represent only 30 percent of our sample, we decided that half of our interviewees would be from these households to explore the gendered dynamics of production and reproduction. This is done in the context of work by Newbury and Baldwin (2000), Koster (2010) and Carter (2018) that debates whether female-headed households, many including women that became widowed in the war, are especially vulnerable in Rwanda.

Land and production in western Rwanda

In the last two decades, the government of Rwanda has undertaken sweeping agricultural reforms as well as large-scale investments in education, health and infrastructure. Rwanda also established wide-ranging social protection programmes with some positive, yet uneven, impacts, including improvements in access to employment and public services (Ruberangeyo, Ayebare, and de Bex 2011; Pavanello et al. 2016; Ezeanya-Esiobu 2017).

These efforts notwithstanding, the extent to which Rwanda's growth trajectory translated into the reduction of poverty and inequality remains a matter of debate (Orrnert 2018; Okito 2019). Despite being the heartland of Rwanda's coffee production, Nyamasheke remains the poorest district of the country with 70 percent of the population in poverty (NISR 2018a). Western Province is the most food-insecure region of the country and, in Nyamasheke, 21 percent of households are food-insecure (WFP 2018).[4] To understand the production relations underlying this setting, this section examines property and production relations in Nyamasheke with an emphasis on coffee production, the district's main cash crop.

Property relations in a context of high pressure over land

Rwanda has a comparatively high population density and skewed and fragmented land distribution (MINAGRI 2012). The average size of cultivated land per farming household is estimated at 0.59 ha for the whole country and at 0.49 ha for Nyamasheke (NISR 2012). Erlebach (2006) reports the average size of cultivated land per household to be even lower at around 0.2 ha in the Rwamatamu area (in Nyamasheke). This resonates with our sample in which mean landholdings are 0.29 ha per household.[5] This highlights the need, experienced by most households, to engage in alternative strategies to make a living. Yet, land retains strong meaning: as the locus of home and food provision, it secures a modicum of subsistence. The extreme nature of land fragmentation is illustrated by the fact that there are only 12 landless households and only 11 households with more than 1 ha of cultivated land for the 190 households that provided information for these variables. Most of the differentiation referred to in this paper takes place among households with less than a hectare of land (Table 1), so while the range of the land distribution is narrow, there is still a very high level of inequality among, in absolute terms, predominantly land-poor households. While we lack panel data for our sample, anecdotal evidence suggests that the land distribution has become more unequal over time, in line with other studies (Pritchard 2013).

Rwanda implemented comprehensive land tenure reform through the 2004 land policy and the land laws of 2005 and 2013. The reform made registration compulsory and had the effect of formalizing and individualizing property relations (see Leegwater 2015). This intensified commodification and has been constitutive of class relations in several ways:

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[4]Food insecurity is measured using the World Food Programme's CARI (Consolidated Approach for Reporting Indicators of Food Security) approach: 'a method that combines a suite of food security indicators, including the household's current status of food consumption (food consumption score) and its coping capacity (food expenditure share and livelihood coping strategies) into a summary indicator – the Food Security Index (FSI)' (WFP 2018, 17).

[5]Our figure refers to operational holdings and excludes households with no farming land, while Erlebach does not specify if these households are included in the calculation. The much lower numbers reported by Erlebach and ourselves indicate strong local pressures over land and are partially due differences in survey design that in our case is more sensitive to land-poor households.

Table 1. Distribution of households according to operational landholding ($n = 190$).

Area of operational holding (in ha)	Number of households	Percentage of all households
0	12	6.3
0 <= 0.25	144	75.8
0.25 <= 0.50	17	8.9
0.50 <= 0.75	4	2.1
0.75 <= 1	2	1.1
> 1	11	5.8
Total	190	100

title transfers are painstakingly slow, especially for returnees trying to access land, and land markets exacerbate class differentiation as vulnerable households are prone to distress sales while land purchases remain prohibitively expensive for most. Although inheritance continues to be the main route to acquire land and women were granted equal rights of inheritance in 1999, their access to land remains problematic (Isaksson 2015; Bayisenge 2018; Bigler et al. 2019). For many women, especially those whose parents died before the reform, access depends upon what they can claim through marriage and is often mediated by family relations. Women that are unofficially married have almost no tenure security, as was the case of one of our respondents who had to move to live with her parents after the death of her partner.

Coffee in Nyamasheke

The economy of Nyamasheke revolves around the production of coffee for export. Coffee was introduced to Rwanda in 1904 by German missionaries (Guariso, Ngabitsinze, and Verpoorten 2012). Coffee trees and cultivation knowledge are usually handed down in families over generations and have taken on important cultural significance.

Today, coffee farming is dominated by smallholders. Coffee is the country's second most important agricultural export product after tea, accounting for around 15 percent of agricultural export value (MINAGRI 2019).

The Rwandan state intervenes strongly in the coffee sector through the National Agricultural Export Development Board (NAEB). In 2016, NAEB instituted a zoning policy whereby all farmers are required to sell their coffee to designated, and often privately-owned, washing stations for processing (Gerard, Clay, and Lopez 2017). Farmers can sell their coffee cherries either directly at the washing station or via official buyers licensed by the washing station. Buyers – 'acheteurs', usually better-off villagers – are stationed at strategic locations and buy up the coffee from nearby farmers in their zones who usually bring it to them on foot. The production of semi-washed coffee, in which the coffee is de-pulped and dried by the farmers, is heavily discouraged (NAEB 2018), limiting opportunities for farmers to add value to their product and reap higher prices.

NAEB enforces a minimum price, over which washing stations can offer a premium. The Coffee Exporters and Processors Association of Rwanda (CEPAR) organizes the distribution of fertilizers and pesticides which are predominantly financed with export fees – farmers thus pay for these inputs indirectly (Gerard et al. 2018). Despite these measures, many coffee growers in our sample complained about a continued loss of purchasing power, arguing that variable production and living costs are not reflected in disappointingly low coffee prices.

In Nyamasheke, almost all coffee is grown by farming households. There are only a dozen large-scale coffee plantations (with more than 5,000 coffee trees) in the administrative sectors where we conducted the survey, yet these are very important employers, particularly during the harvesting season. Coffee cooperatives are also rare.

Coffee is the most important cash crop in our study region: 43 percent of all the households with land access in our sample grow coffee for sale. Proceeds from coffee are often used to pay for clothes, hoes, health insurance and school expenses. Coffee farmers tend to be considered more creditworthy than other farmers and have easier access to loans guaranteed by their coffee sales.[6]

There are, however, important entry barriers to coffee farming that help explain why the average operational holding of coffee-producing households is 0.41 ha in contrast to 0.23 ha for households with land access that do not produce any coffee. Furthermore, only 40 percent of farmers with less than 0.25 ha of land (the largest category in our sample) grow coffee.

First, coffee is a perennial crop with a single harvest per year. Thus, coffee farmers need a means of subsistence to support themselves between coffee harvests, which not all farmers manage. Hélène is a widow with a small plot but does not grow any coffee.[7] Instead she works for wages and grows soybeans, beans and cassava for own consumption. When we asked why she does not plant coffee, she said: 'The farm is too small and the coffee takes too long. I can harvest at the end of maybe one year. So, it will not be good because I need food for my children'. Second, coffee requires a certain level of capital investment, since Arabica trees only start producing cherries after three to four years (Guariso, Ngabitsinze, and Verpoorten 2012). In the meantime, they also require inputs, which not everyone can access.

Nevertheless, coffee is crucial in Nyamasheke given its direct and indirect spillover effects as a labour-intensive crop. Coffee is a key catalyst of the local labour market and provides wage-earning opportunities, especially for people who cannot produce coffee.[8] Since few households have the means to produce enough food to sustain themselves all year long, most need to complement their own production with sharecropping or other forms of work.

A labour-centred approach to class relations

Recent contributions to class analysis stress the usefulness of a labour-centred approach (Selwyn 2016). These contributions are themselves nested within a longer tradition of thinking about class in relational terms. A class-relational approach emphasizes dialectical and unequal relationships underpinning different forms and modes of exploitation and accumulation (Campling et al. 2016; Pattenden 2016). Importantly, classes are seen as intersecting with other sources of oppression such as gender or caste: their associated trajectories are open-ended rather than linear (Pattenden 2016). Class boundaries are often

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[6]Most are informal loans from village saving groups or local social networks (e.g. employers, local power holders, acquaintances or family members), only few of which are invested in production. There are also more formal loans from cooperatives that lend to their members and from banks that can play an important role, notably for better-off households.
[7]All names were changed to protect the respondents' identities.
[8]Even households that neither grow coffee nor work on coffee farms can find themselves renting land from, or indebted to, coffee farmers.

fluid, and class positions themselves can be unstable, with households combining different class elements and oscillating between various class positions across time, e.g. seasonally or across life cycles (Lerche 2010). In this section, we lay out what a labour-centred analysis entails and use it to interrogate class relations in rural Nyamasheke.

Labour exploitation in class analysis

The world of work opens a window to observe the relations and struggles of agrarian societies in transition. First, it sheds a light on the measures deployed by employers to monitor and discipline workers and the many acts of defiance and resistance. Second, the coexistence of inter-household hiring and forms of self-employment requires us to account for occupational multiplicity, a key feature of rural livelihoods. Third, a labour-centred approach helps expose the often disguised, unequal and exploitative work relations that are at the core of many institutional arrangements – something we will examine in the context of land rentals and sharecropping. A labour-centred perspective is therefore a fruitful way to explore class relations and grasp their multidimensional character.

We make use of two important contributions that put labour relations at the centre. On the conceptual side, the category of 'classes of labour' (Bernstein 2010) has been developed to capture 'the growing numbers … who now depend – directly *and indirectly* – on the sale of their labour power for their own daily reproduction' (Panitch et al. 2001, ix, cited in Bernstein 2010, 110–111, italics by Bernstein). This pays attention to the diversity of labour encounters across rural worlds, notably the many marginal farmer households engaging in casual wage employment (Lerche 2010; Pattenden 2016). Unlike Bernstein, who would include some petty commodity producers in this group, we will distinguish 'workers' (whose main economic activity involves working for others) from 'petty commodity producers' (whose own labour is the pillar of their farming).

On the other hand, for the purposes of observation, we build on a tool to measure labour exploitation developed by Patnaik (1976; 1987) and used in various contexts. It sums up the class positions of different households in relation to their work arrangements: '[w]hile no single index can capture class status with absolute accuracy, […] *the use of outside labour relative to the use of family labour*, would be the most reliable single index for categorising the peasantry' (Patnaik 1976, A-84, italics in original). Patnaik's index considers possession of the means of production, intensity of the production effort and whether labour is predominantly hired in or out. This tool expands on indices based solely on acreage by incorporating the intensity and organization of (re-)production. Acreage or asset-based class indices would be unhelpful in the Rwandan context where acute land scarcity means that ownership differences can be small in absolute terms and at the same time result in gross inequality. A labour-centred perspective does not negate the importance of access to the means of production but incorporates the different arrangements households are entering in response. It highlights that land access is not the only class-forming variable, but that class is contingent on other factors such as social connections, the capacity to mobilize labour power and access to wage employment.

Class positions as a starting point

We have adapted the labour exploitation index to the Nyamasheke context.[9] First, we adjusted the class structure to distinguish between households that were primarily selling labour power, primarily self-employed or primarily buying labour power. A second adaptation was to include non-agricultural work in our analysis.[10] Third, wage work paid in kind as well as the work imputed into sharecropping and land rentals constitute an important mechanism for surplus appropriation and were therefore included in the calculation of the index.[11] On the other hand, *kuguzanya* (traditional labour exchange) was excluded because it is, as it is practised in Nyamasheke, a reciprocal arrangement (as will be shown below). Finally, and building on Kitching's (1980) observations in Kenya, two additional classes of households were added: households with access to professional jobs (high-skilled, formal, non-agricultural workers such as teachers and nurses) and households that depend mostly on non-agricultural self-employment (petty traders and shop owners). Patnaik assumed uniform labour productivity, but this does not hold in Nyamasheke. Compared to 'workers' and 'petty commodity producers', 'professionals' and 'retailers and traders' respectively engage in very different forms of work with different labour productivities.

Using the labour criterion together with these adaptations to analyse the survey data, five classes are proposed: (a) 'workers', i.e. households that in the last 12 months spent more labour days working for others, often in casual jobs, than they used in own-account farming; (b) 'petty commodity producers' that work more days on their own farm than the number of workdays that they hire either in or out; (c) 'capitalist farmers' that employ workers for more labour days than they work on their farms themselves; (d) 'professionals' with access to high-skilled non-agricultural jobs and (e) 'retailers and traders' who depend largely on non-agricultural self-employment. Figure 1 presents the distribution and helps identify some key features of agrarian class relations in Rwanda.[12]

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[9]Oya (2015b) proceeds similarly to distinguish between 'classes of labour' and 'classes of capital' in Mauritania, although without referring explicitly to Patnaik's index. Most attempts to identify socio-economic groups in rural Rwanda are instead based on participatory poverty assessment exercises which consider a range of dimensions such as food security, education, land holdings and work. This usually results in six groups (see Ingelaere 2007; Ansoms 2010) corresponding to the *ubudehe* classification scheme used in Rwanda to identify beneficiaries of social protection programmes. In 2015, the categories were condensed to four groups (Ezeanya-Esiobu 2017). Such approaches to socio-economic differentiation vary from our labour-centred method. They provide locally grounded descriptions but conflate a household's integration into the relations of production with associated markers of wealth and well-being.

[10]A variant also used by Crow (2001) and Nagalia (2018).

[11]In the absence of a direct measurement, we estimated the days worked by a household on their own farm and in a sharecropping/rented plot by attributing the total number of days worked proportionally to the area of the household farm and area used in sharecropping/rented land (we thank Utsa Patnaik for this suggestion). For leased out land (in only four cases of the sub-sample used for this analysis, see footnote 12), where we lacked the corresponding data of the household using that land, we imputed the median labour days per square metre used on land leased in our calculations.

[12]We only included households with complete information and excluded inconsistent cases to increase the accuracy and validity of our analysis. Problematic cases with inconsistent key variables, e.g. a household reporting a large production volume but no work input by anybody from the household or outside, were thus excluded. This substantially reduced our sample size from 233 to 137. Therefore, statistics related to the groupings based on our labour index have only been calculated on this sub-sample. While the differences in land ownership and operational holding between the two samples are not statistically significant, the excluded households reported substantially fewer labour days of any kind. This makes sense given that data for these cases was incomplete or inconsistent and indicates underreporting (however, elder and people with disabilities who no longer engage in many work arrangements are also found in this group).
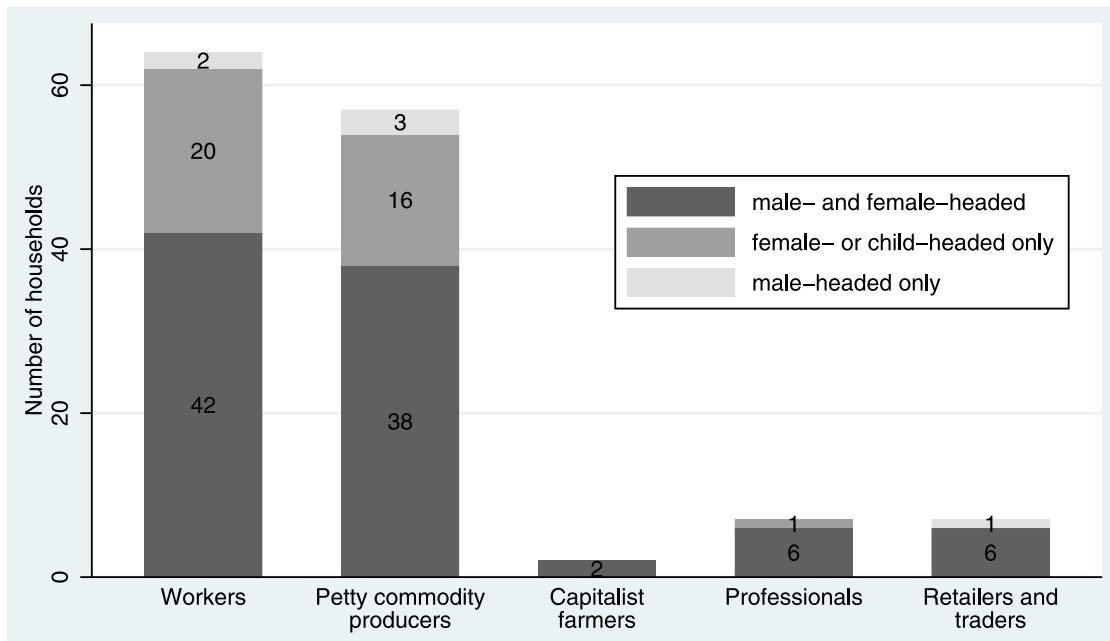
Figure 1. Distribution of households in sub-sample according to class grouping and household type (*n* = 137).

First, the majority of households (47 percent) are classified as 'workers'. The prevalence of working households demonstrates a high degree of dependence on rural labour markets and the limitations of own-account farming for social reproduction. Although 42 percent of households are classified as 'petty commodity producers', most of these households participate to some degree in labour or output markets. Subsistence farming, in the strict sense, is thus truly the exception.

The sub-sample includes two households in the class of 'capitalist farmers'. Corporate-owned estates and washing station owners can also be counted as agrarian capital but will not be picked up in a household survey. Interviews with representatives from estates and washing stations were therefore carried out separately and have informed our analysis.

The small number of 'capitalist farmers' in the sample relative to 'professionals' and 'retailers and traders', suggests that there may be limits to capital accumulation in agriculture. After achieving a certain level of accumulation, households seem to diversify away from agriculture. Given the acute land scarcity in Rwanda, there appear to be fewer options to reinvest in buying land, contrary to what Kitching found among 'capitalist farmers' in Kenya (1980).

Finally, Figure 1 shows the prevalence of female-headed households among the more precarious 'workers' and 'petty commodity producers'. Land-poor widowed, divorced and separated women face the triple burden of production, reproduction, and discrimination in the labour market. The extent to which female-headed households manage to retain access to land is key. In addition to a loss in economic security, many women told us that they missed emotional support and felt lonely. For Françoise, this translated into feeling disempowered: 'Normally it doesn't affect my relationship with others but of course, I have a single-headed household, I know that I am alone. For instance, I am not in a position to start conflicts with my neighbours'.

While Patnaik's tool provides a rough but useful *quantitative* approximation of class position that goes beyond traditional asset-based measures, its unidimensional character is limiting because it counts all workdays as equivalent. In contrast, a class-relational approach aims to identify the dynamic position of households within a web of (work) relations. The ensuing challenge for agrarian political economy is then to develop ways to conceptualize, observe and measure the multidimensional and dynamic nature of class relations. This requires going beyond capturing the magnitude and direction of surplus extraction to reveal also *drivers, functions and power relations* embedded in labour arrangements. The next section examines these questions and the resulting struggles over the fruits of labour. In so doing, it approaches classes from a relational instead of a positional perspective, thereby befitting settings with no sharp polarization.

Mechanisms of labour mobilization and their tensions

This section presents empirical findings on four key labour institutions prevalent in Nya-masheke: wage labour, *kuguzanya* (labour exchange), *nyiragabana* (sharecropping) and *kuragiza* (cattle-sharing). For each, we will describe the arrangement and to what extent it operates as a mechanism of surplus value extraction with different functions and temporalities attached to it, as well as inherent power relations. This helps reveal mechanisms of accumulation and exploitation, and to what extent they harbour the possibility to transform the structural position of a household.

Active rural labour markets

Nyamasheke has very dynamic labour markets. In our sample, 51 percent of households worked for wages at some point during the 12 months preceding the survey. Conversely, 15 percent of households were in a position to hire workers. Most employment in the district is agrarian in nature (72 percent of hired-out wage employment activities and 97 percent of hired-in).

Almost all agricultural work at the village level involves physically demanding manual labour. Many respondents reported lacking stamina and experiencing pain from agricultural work. In selling their labour power, workers' bodies become instrumental to commodity relations (Mezzadri 2017; O'Laughlin 2017). In this context, and coupled with pervasive food insecurity, old age and disability are heavy impediments to work. Several respondents described a vicious circle whereby they have to demonstrate to would-be employers that they have eaten, or that they are bringing enough food for the day, to ensure that they will have the energy necessary for the task at hand. Françoise, a widow and mother of six who depends on casual wage work, recounted that sometimes employers 'look at whether the workers brought food for lunch and those who don't may be chased away because they won't be able to work up to 2pm without lunch'.

Yet, the non-agricultural sector remains a crucial livelihood component, accounting for 22 percent of hired-out wage employment in our sample. About half a dozen households have formal sector jobs, the majority of which are in the public sector as teachers and nurses. The two prevailing casual non-agricultural jobs are in construction and

transportation.[13] Women are generally excluded from the latter jobs. This contributes to the gendered nature of labour markets in Nyamasheke because it reserves some of the best paid unskilled off-farm jobs for men, reinforcing patriarchal roles. In addition, public works employment under the Vision 2020 Umurenge Programme (VUP) is another important source of income for the poorest.

Labour markets, for agricultural work in particular, are localized and casual in nature. Of all households hiring workers, only 9 percent employ workers from outside their administrative sector, and just 18 percent of households working for wages reported any migration longer than a month. Contracting is normally orally agreed and most hiring is done on a daily basis, except for task-based activities like coffee pruning. Employment opportunities are piecemeal and strongly determined by seasonal production cycles, with most households working for a number of different employers throughout the year. Location, social networks and personal relationships are important to access employment. Several respondents mentioned costs involved in looking for a job, having to expend considerable time and energy to find work, and, after completing the task, chasing after the payment. Cash and in-kind payments fluctuate throughout the year and are higher when labour markets tighten around the coffee harvest season from late March to July. Between October and December, demand for labour power is sluggish, leaving many heavily under-employed and suffering from hunger and deprivation. Many households use up any savings or food stocks they have left and depend on the solidarity of others as well as in-kind payments for whatever work they can find.

Further, labour markets are gendered. On a global scale, women are discriminated against, among other areas, in their access to 'decent' jobs (Kabeer 2012). However, awareness of the transformative potential of women's wage employment, especially in export-oriented sectors, is growing (Sender, Oya, and Cramer 2006; Van den Broeck, Swinnen, and Maertens 2017), although gendered discrimination and empowerment in the labour market remain hotly debated (see Krumbiegel, Maertens, and Wollni 2020; Razavi et al. 2012). Based on the overrepresentation of widowed, separated and divorced women in rural labour markets, Oya and Sender (2009) explore the extent to which this opens an avenue to women's empowerment as opposed to being a mere consequence of their marginal status. Recent studies on Rwanda have confirmed women's unequal employment opportunities, but there are diverging accounts on the labour market participation of female-headed households (Ansoms and McKay 2010; Petit and Rizzo 2015; Bigler et al. 2017).

In Nyamasheke, married women are considered primarily responsible for large parts of household farming, while their husbands are often in charge of securing off-farm income. Depending on the households' needs and the husbands' relative success in finding wage labour, wives may look for complementary income sources. Moreover, with growing land scarcity and more female-headed households, women are further pushed into wage labour. Roughly half of all wage workers in our sample are women, although on average, they work 68 days per year as opposed to 140 days for men. In addition, not only are women in charge of most reproductive tasks in the household, but they frequently also have no choice but to bring their small children to work. A few employers invoke this to rationalize their reticence to employing women. More generally, this is

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[13]Two of our eight villages have lake access and include households for whom fishing is a key activity.

used to justify women being paid less. To conclude, our data shows both the various ways in which women are discriminated against in the labour market as well as the growing reliance on women's wage labour for production and reproduction.

A final characteristic of wage relations is the variety of means of payment reported by respondents, including payments in cash or in kind paid daily or upon completion of a specific task. The mean daily agricultural cash wage is around RWF 700 for women and RWF 750 for men.[14] Coffee harvesting is usually paid around RWF 40 per kg, often providing a higher daily wage equivalent than other jobs, and the pay for coffee pruning depends on the area worked.[15] Usually, workers are free to do the task-based activities alone or with others (typically with their children or spouse). Of all daily paid agricultural jobs reported in our sample, 11 percent are paid in kind (in most cases with food, typically beans, cassava or sweet potatoes).

These various payment forms have specific functions and class dimensions. On the employee side, the most food-insecure households are under daily pressure to satisfy immediate nutritional needs. They accept in-kind payment partly because they cannot afford to wait or find food to buy after work. A job paid in kind saves workers a trip to the market and diversifies the diet of poor households. This was described by Alice, a widowed returnee from the DRC: 'When I have cassava, I can't eat it alone […so] I go to someone and ask if they have a job for me, so that I can weed for them and get some beans, so that I can mix them with cassava to eat'. Net hiring households tend to have more means and might be able to afford longer-term investments. In a context of unequal power relations and limited monetization, households sometimes end up combining payment forms according to the different timing of their needs (in-kind payments tend to be especially sought after in the lean season). This is exemplified in Françoise's statement: 'When I don't have something to eat, I request the in-kind payment because I can't eat the money'.

Often, women with childcare duties in food-insecure households are pushed into precarious jobs that are paid in kind but tend to be more flexible in terms of working time or bringing children to work. This is reinforced by a range of patriarchal norms that tend to exclude women with childcare responsibilities from better employment opportunities such as jobs at washing stations, on commercial plantations or through the VUP scheme. Thus, precarious jobs characterized by a certain flexibility do not improve the situation of women but, on the contrary, reinforce the existing division of labour.

On the employer side, in-kind payments, much like other work arrangements discussed below, are ways of mobilizing labour power when no cash is available. However, the persistence of in-kind payments more likely reflects a lack of liquidity rather than the absence of commodification. In fact, there is a certain permutability between in-kind and cash payments. This is especially the case when households hire workers to meet time-sensitive peak demand or when they are forced to hire because they cannot work themselves (e.g. due to health impairments or old age). Without access to more resources or a larger scale of production, the only currency the latter households might have is the produce grown on their plots. Households thus hire workers for different reasons and

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[14]This discrepancy increases to about RWF 700 and RWF 900 respectively if the non-agricultural sector is included. Bigler et al. (2017) find a similar wage gap in Northern Province.

[15]Respondents harvest about 20–25 kg per day but can surpass this if the conditions allow as they have an incentive to work fast.

under different sets of constraints. This is why a class-relational approach can help untangle power relations in work arrangements that are often seen as being clear-cut.

Even though employers in these localized markets often hire neighbours, kin and friends (i.e. people with whom they are in long-term personal relations), and there are instances of solidarity or paternalism, wage employment is also marked by power imbalances and struggles. Our respondents described frequent disputes about work. Because arrangements are informal and piecemeal, the terms of work such as length of the working day, intensity of work, breaks and terms of payment are all subject to negotiation and frequent sources of conflict between employers and employees. For example, Françoise had an employer that would demand workers to work extra hours and would not allow them a break for lunch:

> This would lead to disagreements amongst the workers because some think that the boss is not fair and others, because they have no other choice, will just work the additional hours […] If the boss becomes aware that there is someone complaining, this person could even be threatened with losing their payment for the day.

There is limited scope for workers voicing their complaints because these tensions emerge in the context of highly personalized contractual relations. Units of production are usually small, hiring only a few workers at a time, so there are not many workers with whom to collectively organize. For the most part, these struggles translate into acrimonious exchanges between those doing the hiring and those working for wages.

Employers are also reported to use a wide range of disciplining measures to increase the effort extracted, such as monitoring workers closely and in some cases withholding payment, threatening to dock workers' wages or not paying at all. In many instances, these deductions are arbitrarily imposed by the employers and hard to contest by the workers. Fidèle, a young father who works in agriculture and construction, said: 'If you don't work well, the employer may decide to reduce your pay. So, you behave'. Other tactics include not paying workers for the hours during which rainfall stops work.

These examples show that, given high labour supply and the relative scarcity of adequate employment opportunities, most of the power resides with the employers, and space for resistance or collective action is limited. Respondents complained that voicing demands carries the risk of repercussions and lowers the chances of rehire. Employment pressures are compounded when workers are made to compete or turn against each other, for fear of losing pay. Some workers resort to what Scott referred to as 'weapons of the weak' (1985), such as hiding away to take breaks or boycotting bad employers. Some coffee washing stations and a large-scale plantation in our sample promote more formal contractual arrangements. These jobs are generally considered more desirable because the pay is higher.

Kuguzanya: the relative reciprocity of labour exchange

In contrast to wage employment, *kuguzanya* is a traditional labour exchange system involving no payment. It allows households to mobilize labour power to work on their own or sharecropped land and is frequently practised in Nyamasheke. It is usually based upon personal relationships with friends and family members. The tasks performed (typically ploughing or weeding for cassava, beans or maize) vary, but the arrangement is

seen as reciprocal and fair, independent of the scale of the exchange. *Kuguzanya* can be practised in an individual pairing or in small groups that are typically gendered but flexible enough to allow a spouse of the opposite gender to stand in if need be. Households are often motivated to participate in these labour exchanges as a form of sustaining and strengthening communal relations. Takeuchi and Marara (2007) confirm the reciprocal nature of the arrangement and argue that *kuguzanya* is mostly practised by poor households.

Nyiragabana: inequality in sharecropping arrangements

One of the determinant features of agrarian relations in Nyamasheke is dictated by the peculiar combination of pressure over farmland and the inconsistent availability of wage work. Land-poor households often find themselves needing to access extra land to produce food and may thus engage in a land-sharing institution, a form of sharecropping referred to as *nyiragabana*.[16] This is an informal agreement whereby tenants farm someone else's land, normally splitting the final output 50:50. Landowners generally provide the plot and tend not to contribute inputs or labour; they need only need be present during the harvest to ring-fence their share of the product.[17] Sharecropping arrangements are regularly forged among local villagers and last as long as the respective agricultural crop cycle. Importantly, *nyiragabana* is practised both between wealthier and poorer households as well as between poor households, particularly between labour-poor and land-poor households. Given that tenants are usually expected to provide all inputs (mainly seeds and manure) and necessary labour power, the poorest of the poor are often not in a position to engage in these arrangements, even as tenants.

Around 11 percent of respondents in the survey engage in *nyiragabana*, but these tenancy agreements are especially important for land-poor households. The average area of land owned by households that are *nyiragabana* tenants is 0.08 ha – lower than the overall average of 0.34 ha per cultivating household. Furthermore, female and child-headed households are overrepresented as *nyiragabana* tenants (55 percent of all tenant households).

In many respects, *nyiragabana* resembles forms of sharecropping in other agrarian social formations. However, its idiosyncrasies speak volumes about the specific constraints and possibilities facing land-poor rural households in western Rwanda. Almost no household in the sample relies exclusively on *nyiragabana* for its reproduction, but instead sharecropping seems to complement working for wages and own-account farming: 70 percent of tenant households also do wage work. Importantly, land farmed under *nyiragabana* is used to produce food crops such as cassava, beans and sweet potatoes that are rarely marketed. Both landowners and tenants use this arrangement as a way to source food. Among poor households, this can be the only food they produce directly; whereas households with more land (among landowners) or more labour availability (among tenants) may use *nyiragabana* instead to diversify or expand their food

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[16]Few scholars have studied contemporary sharecropping arrangements in Rwanda. Takeuchi and Marara (2007) refer to sharecropping as *urutéerane*, while Ansoms (2009) briefly describes a similar institution called *ikibara* in Southern Province. This research gap is surprising given that around 15 percent of households in Rwanda cultivate sharecropped parcels (NISR 2018b).

[17]At times, landowners may supply seeds or manure as well.

production to cover needs at different times of the year. This seems to suggest that *nyiragabana* is the form taken by the specific interaction between relatively land abundant and relatively labour abundant households, but there is not necessarily a stark disparity between tenants and landowners. Tenancy arrangements are present both among those who are primarily employed by others and those who are primarily self-employed, and cases of households that have been renting land in and out in different years are not unheard of.

However, *nyiragabana* is far from a mutualistic arrangement: tenants decry that the proceeds of their hard work have to be split with landowners at such a punishingly high rate. In turn, landowners can change the terms of the deal in ways that are openly arbitrary.[18] Tenants know that their livelihoods are on the line if they fail to deliver. Unsurprisingly, *nyiragabana* is often seen as an exploitative institution, in which households would not engage as tenants unless they felt compelled by need. Eveline and Jean-Pierre, a land-poor couple that combines own-account farming with sharecropping, explained that: 'If you don't have land, you can't think twice. What you want is to survive, so you have to go and do it [*nyiragabana*]. It's our decision, no one pushes us into that agreement'. Tenants have few options to negotiate more favourable terms, although some do attempt to grow food in inconspicuous patches of the field and hope that this can be harvested before the landowner finds out.

From the perspective of landowners, *nyiragabana* is a labour mobilization arrangement, with two advantages over labour hiring: there are no payments in cash or kind needed to mobilize this work, and there is no need to monitor workers since the output-sharing formula works as a disciplining mechanism. This is the case of Fabien who is a land-rich farmer. By having *nyiragabana* arrangements in some of his plots, the land is put to productive use without him having to hire or monitor workers. In contrast, Julienne is a widow with a disability that cannot farm the small plot that she owns. Engaging in *nyiragabana* is her strategy for securing food that she cannot produce herself.

Uncharacteristically for a form of sharecropping, *nyiragabana* does not seem to predate land rentals in this part of Rwanda. On the contrary, most of the respondents contend that land rents paid in cash were the norm until sometime in the early 2000s but that, for the most part, these have been replaced with sharecropping agreements which landowners now prefer.[19] The reasons for this shift are not clear, but it could be that *nyiragabana* allows landowners to expand their production without having to hire workers – an expense that many simply cannot afford. It could also be that it is easier for landowners to be paid in kind as part of the sharecropping arrangement than having to chase cash payments.

This suggested transition from land rentals to sharecropping happens against the background of accelerated commodification. At first sight this could seem counter-intuitive, but as households become more deeply integrated into markets (for labour power, coffee, inputs etc.) their social reproduction also changes. It could be argued that their

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[18]The timing of harvesting is often contentious: hungry tenants may be desperate to harvest while landowners may prefer to allow the tuber to mature further. According to Hélène: 'If the landlord doesn't want to harvest, then [the tenants] will sleep hungry. Although they have the products, that landlord doesn't want to harvest at that time'.

[19]This is similar to the observations of Takeuchi and Marara (2007, 112) who note: 'No previous research has discussed sharecropping in Rwanda. Sharecropping in western Rwanda appears to be a relatively new practice that emerged after the civil war in the 1990's'.

participation in labour markets and their demand for traded goods and services is predicated, or made possible, by their own production of the means of subsistence. In this sense sharecropping is not the negation, or the opposite, of market relations but, on the contrary, a condition for the participation of households in markets – akin to the role of marginal own-account farming but necessitated by lack of access to sufficient land. The idea that *nyiragabana* and working for wages are complementary rather than opposite is further supported by the different time horizons in which these two livelihood activities are embedded. Entering a *nyiragabana* arrangement as a tenant means signing up for months of agricultural labour against a distant mid-term goal of harvesting food; in contrast, people set out to find wage work with the hope of returning home in the afternoon with cash or food to cover daily needs.

At a fundamental level, *nyiragabana* leverages a class difference between landowners and land-poor households to facilitate the appropriation of the fruits of labour by landowners, showing how ownership of the means of production and labour relations interact.

Kuragiza: cattle-sharing as a longer-term investment

Another form of surplus labour mobilization is called *kuragiza*, a cattle-sharing institution.[20] Similar to sharecropping for land, households can access livestock through *kuragiza*. Much like *nyiragabana*, in a *kuragiza* agreement animals – cows mainly, but sometimes goats or pigs – owned by a 'giver' are reared by a 'receiver'. All offspring born during the period of the arrangement are assigned to 'giver' and 'receiver' in turns. When the animal subject to the *kuragiza* arrangement is sold, the 'giver' is reimbursed for the initial investment and for veterinary expenses incurred; any remainder (and often the milk produced) is split 50:50. Like sharecropping, cattle-sharing is a labour mobilization institution whereby the profit-sharing formula works as a disciplining mechanism. By making all gains to the 'receiver' contingent upon taking good care of the cow and effective only after selling it, the 'giver' has no need to monitor the work done by the 'receiver' and can rest assured in the certainty of profit. There is also a barrier to entry as 'receivers' have to be seen as trustworthy and able to provide fodder and shelter for the animal.[21] Cattle are not primarily reared for food, but instead as a savings deposit for emergencies. In that vein, engaging in *kuragiza* is meant as a financial investment, unlike sharecropping which is meant to produce food. Additionally, cattle produce manure, a coveted by-product for cash-strapped farmers with no access to chemical fertilizers. Thus, *kuragiza* entails for 'receivers' a combination of a long-term investment with the potential of using manure to improve agricultural productivity and milk for own consumption. For 'givers', it is an interest-yielding reinvestment opportunity.

In the contrast between *nyiragabana* and *kuragiza* we encounter two output-sharing arrangements with different time horizons and trade-offs between use- and exchange-value. First, harvested food crops introduce a time imperative: work is demanding and concentrated in peak labour times. There is a narrow window of time in which food

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[20]*Kuragiza* is somewhat different from the historically important *ubuhake* cattle clientship, not least because the time period of the arrangement can be shorter, and because *kuragiza* usually involves less responsibilities and no longer relies on access to pasture (we thank Prof. Catharine Newbury for this point).

[21]In our research areas, open grazing is generally not allowed and cattle have to be kept in sheds.

must be harvested. Tenants are subjected to this rigid temporality although they can only retain 50 percent of the product. In contrast, cattle-sharing (*kuragiza*) is not seasonal and cattle can be sold at any point in time – although 'givers' usually decide when to sell, because they are in the position of power. Other than manure, *kuragiza* 'receivers' hold cattle to acquire livestock or invest. These two agreements therefore have different class dimensions: in sharecropping, the surplus labour of tenants is squarely appropriated by landowners, whereas through *kuragiza*, 'receivers' are invested in a process that will allow them to one day own their own means of production. While *kuragiza* is seen as a less exploitative arrangement than *nyiragabana*, in both cases relations between tenants and landowners, or between cattle 'givers' and 'receivers', show a tense struggle over the division of labour between the owners of the means of production and those who work.[22]

Class relations in Nyamasheke

We have argued that analysing classes as positions is insufficient to understand the dynamism and diversity inherent in the relations among and between them. Instead, the previous section has taken a relational approach to explore the drivers, functions and power relations underlying different labour encounters that mediate class relations. From this discussion, two insights emerge: first, that relations are shaped by the different time scales that households experience, and second, that subsistence is now fully commodified. These themes cut across different labour arrangements and class positions in Nyamasheke and would be obscured by focusing on class positions alone. As the next section will explain, questions of temporality and commodification apply in most rural settings but how they affect social reproduction is an empirical question worth answering on a case-by-case basis.

Time and markets as intermediary dimensions of class relations

An important dimension of agrarian relations has to do with the different temporal scales that households encounter in their livelihood patchworks. By this we mean that there is a tension between work arrangements based on longer production horizons (typically employers) and households that find themselves at times in shorter reproduction cycles (casual workers, day labourers). At different times, households may have the ability to wait for a harvest or for the delayed payment of a trader, while in other instances their urgency is to ensure that their household has food to eat at the end of the working day. These sets of pressures are expressed in the work relation and provide the conditions for surplus extraction or appropriation.

Demand for jobs, although mostly affected by the seasonality of the coffee harvest, operates at the daily scale. For many poorer households, a day of work translates into food payments that are consumed on the day or cash revenue that is used to meet basic needs, leaving little room for investments or savings. There are nevertheless important differences: households that are dependent on a multiplicity of fragile and casual

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[22]*Nyiragabana* and *kuragiza* may thus be characterized as wage employment in disguise following Oya and Pontara (2015b).

arrangements face great uncertainties that limit longer-term planning. In contrast, other households manage to gain more stable access to wage employment, often through long-standing personal relationships with employers. Even though they might not be able to accumulate, their position is somewhat less precarious.

Own-account farming and sharecropping arrangements are subject to annual cycles. On the one hand, the more households are able to cultivate, the more their subsistence provides security against shocks and against the vagaries of the labour market. On the other hand, this should not distract from the big risks in terms of yield fluctuations and harvest failures inherent in agricultural production.[23] Nature dictates much of the cultivators' time scale. As a result, seasonal pressures and the need for complementary income earned through wage employment apply to most households. Moreover, at a generational scale, class relations are contingent upon life-cycle events such as the influx of bridewealth, the mobilization of labour through marriage, health impairments and old age, return from exile or widowhood.

Throughout all temporal scales, class intersects with other social markers such as gender and location, making classes fragmented and internally differentiated. The resulting personal networks play an important role and can provide crucial support in times of crisis through various, albeit irregular, non-market mechanisms.

Time matters differently for different groups involved in production. In a sense, the differential pressures of timing become another arena of struggle. These pressures may be imposed by natural cycles or market demands beyond the control of producers and workers. But differences in the pressures imposed by timing also sustain surplus extraction in a variety of ways. Those with long time horizons can impose work conditions on those under more pressure; employers extend the working day or delay payments as ways of disciplining workers or transferring onto them the pressures of lacking liquidity and the risks of production. Workers similarly face time as an objective materiality, but differently, in accordance with their reproduction needs and the temporal scales of the work arrangements they find. Yet again, they can leverage time as a medium of reproduction by combining varying time horizons in their struggles to survive or transform their fortunes. Some combinations reveal certain households' flexibility and capacity to mix strategies opportunistically, such as when more stable employment enables households to invest in coffee production. In other cases, households are coerced into different combinations out of desperation or the drudgery of survival. The story of Hélène, the widow that grows some of her own food but is required to sharecrop and take up additional wage employment to ensure her survival, is a case in point.

The second theme captures the implications in Rwanda of a completed process of commodification. There are a number of basic necessities that most households are not able to produce themselves, such as tin roofs or tools, and other goods and services that can only be paid for with cash, such as education, health insurance and bridewealth. Households who have access to some cash, even if only sporadically, through sales of produce or from wage employment can reproduce themselves more comfortably. Some households that lack secure and constant access to cash income cannot afford to work in more regular jobs with bi-weekly or monthly payments because they cannot

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[23]The practice of *kwotsa imyaka*, whereby farmers sell part of their harvest prematurely at much lower prices, exemplifies the temporal and commodification pressures they experience (C. Newbury 1992).

wait so long to be paid and thus find themselves churning between more irregular, but more promptly paid, work opportunities. While most produce some food on their own, many are food-insecure and depend on payments and exchanges, including gifts, bartering or sharecropping to complement their diets. Even some of the households who can afford to hire a few workers for a couple of days are cash-strapped, especially before coffee sales materialize, and can only pay in kind.

By relating this to our previous discussion on time scales, we can now compare the different functions of *nyiragabana*, *kuragiza* and wage work in kind and cash along time horizons and with regard to commodity relations. Table 2 summarizes the different temporalities in which these arrangements operate and the needs they satisfy.

As shown above, both *nyiragabana* and *kuragiza* involve a risk transfer onto the weaker party who is responsible for, respectively, the crop production and the cattle rearing. The two arrangements serve, however, different purposes. *Nyiragabana*, much like work paid in kind, prioritizes food provision and thus use value, whereas *kuragiza* and work paid in cash produce primarily exchange value. Very few households are to be found exclusively in one of these work relations (work paid in kind, work paid in cash, *nyiragabana* or *kuragiza*) as most combine elements of them.

Although the literature has convincingly argued that, with few exceptions, the commodification of subsistence ran on par with the world historical consolidation of capitalism (Bernstein 2010), there remains an influential current in agrarian studies that stresses, in contrast, autonomy and self-sufficiency as a possible alternative (Rosset and Altieri 2017). The Nyamasheke case is useful to examine in light of this debate. Prima facie, there are characteristics of production and livelihoods that would suggest that commodification involves social relations of production only partially and that people in Nyamasheke participate in markets only opportunistically. For example, most respondents reported problems of liquidity and being continuously cash-strapped; there is an important contribution to household reproduction by goods and services produced domestically and not traded in markets; and there is evidence of many instances in which work is paid for in kind. However, it is argued here that these constitute, on the contrary, evidence of the advanced commodification of subsistence, meaning that social reproduction entails the mediation of markets. Respondents and people in the region, by extension, can no longer sustain themselves meaningfully with what they produce alone, and a large share of households do not have the means to produce any food. Markets, however informal and vernacular, are not only necessary for basic consumer goods, but also needed to ensure household reproduction and accumulation. The commodification of subsistence creates the compulsion that makes people available for work and, frequently, more likely to be exploited the more their subsistence depends on this labour encounter. Commodification also provides those seeking to employ someone with pools of people in

Table 2. Work relations according to needs and time horizon.

		Time horizon	
		Short term: ABSOLUTE SURPLUS EXTRACTION	Long term: INTERNALIZATION OF RISK
Commodity relations	Production of USE VALUE Production of EXCHANGE VALUE	Work paid in kind Work paid in cash	*Nyiragabana* *Kuragiza*

need of work. More specific to the Nyamasheke case, but likely applicable to other settings, commodification contributes to the emergence of an extremely dense network of work arrangements that are central for enabling production at the aggregate level (notably coffee exports) and livelihoods for most households, while neither leading to the emergence of stable wage employment nor serving as the foundation of an established or single class identity.

Churning at the bottom: relentless micro-capitalism and the limits of polarity

This begs the question on what level the households in our sample are able to reproduce themselves as a result of these different pressures, i.e. to what extent work relations reinforce or have the power to change a household's circumstances. The often piecemeal livelihood patchworks worked out ingeniously by many households under intense commodification pressures or employment uncertainty offer limited potential for accumulation, leaving many households subject to what Bernstein (2010, 104) calls a 'simple reproduction squeeze'. Moreover, the reproductive value of most wage employment is so low that the survival of many households depends on their ability to multiply these precarious engagements. This is what we mean by 'churning at the bottom' – a sense of powerlessness experienced by those in precarious livelihoods.

There are two related aspects to these dynamics in Nyamasheke that make a class-relational analysis indispensable. On the one hand, while it may seem from afar like there is a relatively homogenous, albeit poor, peasantry, closer inspection reveals a multitude of differentiated labour encounters. This exemplifies what Davis has called 'relentless micro-capitalism', i.e. localized systems of accumulation and exploitation – a typical feature of informal economies characterized by petty exploitation and growing inequalities (2006, 181). In Nyamasheke and many other rural settings of the Global South, high levels of instability and fluidity in work arrangements result in some household members simultaneously taking on the role of exploiter and exploited in different relations, in what have been called systems of nested or recursive exploitation (Pérez Niño 2014). Importantly, acknowledging fluidity does not mean that class positions are meaningless or random like a game of musical chairs. The plurality of different work arrangements does not amount to a mere combination of livelihood strategies but is the consequence of being under a range of temporal and commodification pressures. What we want to stress here is not diversity per se but how these different work arrangements are part of a topography of uneven power relations. As a result, localized patterns of micro-capitalism leave their mark on communities, shaping inter-household relations, even in contexts of no sharp local polarization.

The study of class relations, even where quantitative differences between classes may be minute, is therefore indispensable to understanding production relations in a place like Nyamasheke. Production and reproduction in agrarian formations rely on the mobilization of labour power that exploits these very class differences. Such manifestations of class relations reveal how capitalism works at a local scale because they permeate social relations. While these differences appear small from afar, they are consequential: in a context of high precarity, they shape life experiences and the scope of action of the people of Nyamasheke. To the extent that these differences are experienced as

being prominent, they could help explain the limitations of the emergence of broader identities and forms of collective mobilization.

Concluding remarks

This paper offered two ways of approaching class dynamics in Nyamasheke, the main coffee producing region of Rwanda, first analysing the groupings that form when households are classified in relation to their use of labour power and then contrasting different forms of labour mobilization to reveal power differences among participating households. In the first instance, the labour-centric approach allowed us to propose a class structure for Nyamasheke where, at its simplest, net sellers of labour power and net buyers of labour power are in the extremes and households that apply most of their labour power to their own production are in the middle. Our second avenue of analysis, the study of the quality and functions of different forms of labour mobilization among households, brought to the fore another set of considerations: it showed in a less discrete and more relational way that the labour relations underlying productive activities in the region invariably involve sets of households in different power positions vis-a-vis each other. Production therefore relies on the leveraging of class differences and varying degrees of surplus value extraction.

These power imbalances are not always the automatic consequence of some households owning the means of production and mobilizing the labour of households that do not (such polarity is largely exceptional in Nyamasheke). Instead, they are the way that less dramatic differences between households are experienced and mobilized in production, in conjunction with a set of pressures and tensions in social reproduction that households specifically experience. Here we referred for instance to how one household's relative pressure to find food or cash for their own subsistence becomes an opportunity for accumulation for another household, frequently one that is more secure in their access to food and cash. Therefore, while the first approach (the class structure approach built on quantitative differences in the use of labour power) demonstrated that power differentials between groups exist; the second approach (focusing on the quality of labour relations) demonstrated that these power differentials do not take a single form, but are expressed and experienced in different ways. Studying class and inequality at the micro-level and in the absence of strong overall differentiation may seem daunting, but it is all the more important because, at the margins, these differences can have far-reaching consequences.

We have shown how, despite relatively limited monetization and the high prevalence of own-account farming, subsistence in Nyamasheke has been thoroughly commodified. Examples of the market pressures discussed above include among others: (i) the turnaround in terms of work arrangements which in some cases postpone payments until the end of the productive cycle, thus forcing many to engage in piecemeal work paid on a daily basis to support immediate food consumption needs; and (ii) the way in which households participate in different markets as required by their social reproduction, in some cases buying agricultural inputs and tools and in others paying for school uniforms and mandatory health insurance. Temporality and commodification thus shape households' reproductive strategies. These themes will also be relevant in other rural settings.

In Nyamasheke, coffee production engenders crucial direct and indirect spillovers, notably via dynamic local labour markets, and provides an avenue of accumulation for some. Despite the dynamism of the Rwandan coffee sector, small farmers have limited room for accumulation in agriculture. This pushes most households to engage in a variety of precarious small-scale work arrangements subject to strong seasonal pressures and different time scales. Policy measures to tighten labour markets and better accommodate the needs of female-headed households could make an important contribution.

Acknowledgements

Disclosure statement

Funding

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PART III:
APPENDICES

Appendix 1:   Survey Questionnaire Rwanda

Also available under the following DOI: https://doi.org/10.48620/45

Survey Questionnaire Rwanda – Part 1

Variable Name	Variable Label (survey question)	Variable Note (hint)	Type and Value Label Name	Code	Value Label
group0_enu	group0_enu		begin group		
a13_codeenumerator	Name of the enumerator		select_one enumerator	1	Anonymised
				2	Anonymised
				3	Anonymised
				4	Anonymised
				5	Anonymised
				6	Anonymised
				7	Anonymised
				8	Anonymised
				9	Anonymised
a14_genderenumerator	Gender of the enumerator		select_one gender	1	Male
				2	Female
village	Define Village		select_one village	1	Anonymised
				2	Anonymised
				3	Anonymised
				4	Anonymised
				5	Anonymised
				6	Anonymised
				7	Anonymised
				8	Anonymised
code_id	Household ID number		text		
avail	Is anyone in the household available for the survey?	The respondent should be the one most knowledgeable about the household.	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
replacement	ENUMERATOR: KINDLY CONTACT YOUR SUPERVISOR TO ALLOCATE YOU A REPLACEMENT HOUSEHOLD		note		
replacement_id	What is the household ID number of the REPLACEMENT HOUSEHOLD?		text		
hhname_r	What is the name of the household head of the REPLACEMENT HOUSEHOLD?		text		

Variable	Label	Note	Type	Code	Choice
introduction	Introduce yourself to the respondent. Rephrase the following in your own words: I am working for the FATE research project which is led by the International Center for Tropical Agriculture and funded by the Swiss National Science Foundation and the Swiss Agency for Development and Cooperation. The purpose of this survey is to learn more about agricultural production and especially about market-oriented agricultural production and its effect on your work and your everyday life. Individual reports are kept confidential. Your household has been randomly selected for this survey.		note		
consent	Do we have your permission to interview you and use the data for research?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
			end group		
consent_given			begin group		
Group1_villagedistrictG PS	Group1_villagedistrictGPS		begin group		
starttime	Start time of the interview	Start time is automatically recorded	time		
today_date	Today's date	Date is automatically recorded	date		
			end group		
moduleA_Hhcharacteris tics1	Household Characteristics		begin group		
a2_nameprim	What is the name of the primary respondent?	The respondent should be the one most knowledgeable about the household.	text		
a8_gender	Gender of the primary respondent		select_one gender	1	Male
				2	Female
status	Relationship to the head of household		select_one respondent	1	1. Household head
				2	2. Spouse
				3	3. Child above 18
				4	4. Mother
				5	5. Father
				96	96. Other, specify
status_other	If other, specify		text		

Variable	Label / Question	Type	Value	Value label
a7_hhtype	What is the type of household?	select_one code_hhtype	1	1. male and female headed
			2	2. female headed only
			3	3. male headed only
			4	4. male child headed
			5	5. female child headed
		end group		
notemoduleBa_Hhlisting_and_employment	Module A: Household Roster	note		
hh_people_nb	First, we would like to ask you about each member of your household. How many people have been part of this household in the last 12 months?	integer		Please list the names considered to be a member of this household, starting with the primary respondent. This is not restricted to family members.
repeat_hh	Household members	begin repeat		
b1_name	Name of the household member?	text		
B02_hh_member_gender	What is ${b1_name}'s sex?	select_one gender	1	Male
			2	Female
B03_hhrelationship	What is ${b1_name}'s relationship to the household head?	select_one hhrelationship	1	1. Household head
			2	2. Spouse
			3	3. Child
			4	4. Son-in-law or daughter-in-law
			5	5. Grandchild
			6	6. Mother/father of male HH head
			7	7. Mother/father of female HH head
			8	8. Nephew/niece of male HH head
			9	9. Nephew/niece of female HH head
			10	10. Brother/sister of male HH head
			11	11. Brothers/sisters of female HH head
			12	12. Other relatives
			13	13. Domestic worker/helper/maid
			96	96. Other, specify
			NA	NA
			DK	DK
B03_hhrelationship_specify	If other, specify	text		
B03_living_here	Is ${b1_name} currently living here?	select_one yes_no	1	yes
			0	no

Variable	Question	Type	Code	Label
B03_why_absent	If not, why not?	select_one why_absent	NA	NA
			DK	DK
			2	1. Study
			3	2. Seasonal work
			4	3. Normal work
			5	4. Receiving medical care
			6	5. Visiting family
			7	6. Training/apprentice
			8	7. Living elsehwere
			9	8. Prison
			96	96. Other, specify
			NA	NA
			DK	DK
B03_why_absent_other	If other, specify	text		
B03_why_move	If ${b1_name} moved here, why did he/she come?	select_multiple why_move	1	1. To marry
			2	2. Lost job
			3	3. Looking for job
			4	4. Working for household (e.g. domestic helper)
			5	5. Working outside household
			6	6. Return from Refuge
			7	7. Leave prison
			8	8. Accompany relatives
			9	9. Was already here
			96	96. Other, specify
			NA	NA
			DK	DK
B03_why_move_other	If other, specify	text		
B04_hh_member_age	What is ${b1_name}'s age?	integer		
b6_marstat	What is ${b1_name}'s marital status?	select_one marstat	1	1. Single/never married
			2	2. Divorced
			3	3. Separated
			4	4. Widowed
			5	5. Married
			6	6. Polygamous
			NA	NA
			DK	DK
b7_school	Is ${b1_name} currently attending school?	select_one yes_no	1	yes
			0	no

Variable	Question	Note	Type	Code	Label
				NA	NA
				DK	DK
b7_not_school	Give main reason for not being in school		select_one why_not_school	1	1. Not enough money
				2	2. Wage worker
				3	3. Household farm or business
				4	4. Housework
				5	5. Parents don't think it's important
				6	6. School too far
				7	7. School is closed
				8	8. Child doesn't want to attend school
				96	96 Other, specify
				NA	NA
				DK	DK
b7_not_school_other	If other, specify		text		
b8_education	What is the highest level of schooling completed by ${b1_name}?	E.g. if he/she is in grade 3 currently, select grade 2 as completed	select_one education	0	None
				1	Pre-primary (kindergarten, pre-school, crèche, etc.)
				11	P1
				12	P2
				13	P3
				14	P4
				15	P5
				16	P6
				21	S1
				22	S2
				23	S3
				24	S4
				25	S5
				26	S6
				31	College or university
				32	Technical or vocational school
				DK	DK
				96	96. Other, specify
b8_education_other	If other, specify		text		
b9_read	Can ${b1_name} read and write?		select_one read	1	1. Cannot read and cannot write
				2	2. Can write only
				3	3. Can read only
				4	4. Can read and write

Variable	Question	Type	Code	Label
			96	96. Other, specify
			NA	NA
			DK	DK
b9_read_other	If other, specify	text		
wage_restrictions	Have any of the following ever restricted or prohibited ${b1_name} from working for payment?	select_multiple restrictions_who	1	1. Husband/wife
			2	2. Brothers/sisters
			3	3. Parents
			4	4. Other family
			5	5. Government
			96	96. Other, specify
			97	97. None
wage_restrictions_other	If other, specify	text		
wage_restrictions_reason	If a family member placed restrictions on ${b1_name}, what was the main reason?	select_one restrictions_reason	1	1. Housework would be left undone
			2	2. Children would not be looked after
			3	3. Elderly people would not be looked after
			96	96. Other, specify
			DK	DK
wage_leave	Has ${b1_name} ever left/finished waged employment in the last 3 years?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
wage_leave_reason	Why?	select_multiple wage_leave (List all relevant events)	1	1. Changed employer
			2	2. Finished casual or seasonal work
			3	3. Quit for family or personal reasons
			4	4. Quit, wages too low or insufficient work hours
			5	5. Dismissed by employer
			6	6. Dismissed following dispute with employer
			7	7. Quit to work on farm operated by household member
			96	96. Other, specify
			NA	NA
wage_leave_reason_other	If other, specify	text		
wage_personal_reason	If ${b1_name} quit for personal/family reasons, what was the main reason?	select_one personal_reason	1	1. Pregnancy
			2	2. Marriage
			3	3. Health
			4	4. Need to care for household member
			5	5. Request of spouse
			6	6. No permission from spouse

Variable	Description	Type	96	96. Other, specify
			NA	NA
			DK	DK
wage_personal_reason_ other	If other, specify	text		
repeat_hh		end repeat		
product	Module B: Activity matrix	note		
wage_employment_yes_ no	Do you, or anybody else in this household have any occupational/income-generating activities? **Include self-employment except own-account farming (there is a separate section for that).**	select_one yes_no	1 0 NA DK	yes no NA DK
wage_employ	If yes, which household member(s)?	select_multiple hhmember	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	${fam_name1} ${fam_name2} ${fam_name3} ${fam_name4} ${fam_name5} ${fam_name6} ${fam_name7} ${fam_name8} ${fam_name9} ${fam_name10} ${fam_name11} ${fam_name12} ${fam_name13} ${fam_name14} ${fam_name15}
repeat_wage_employme nt	begin repeat_wage_employment	begin repeat		
name_member	Please select	select_one hhmember	1 2 3 4 5 6 7 8 9 10	${fam_name1} ${fam_name2} ${fam_name3} ${fam_name4} ${fam_name5} ${fam_name6} ${fam_name7} ${fam_name8} ${fam_name9} ${fam_name10}

Note for wage_employment_yes_no: This includes wage work on another farm or working at their own or another shop/restaurant.

name	type	label	hint	value	choice label
				11	${fam_name11}
				12	${fam_name12}
				13	${fam_name13}
				14	${fam_name14}
				15	${fam_name15}
name_display	calculate				
c1_salact	select_multiple activity	Report all of the occupations/income-generating activities on which ${name_display} has worked during the past 12 months **(including all self-employment except own-account farming, this will follow later)**	This includes wage work on another farm or working at their own or another shop/restaurant.	1	1. Touristic sector
				2	2. Extractive sector
				3	3. Agricultural sector: Weeding
				4	4. Agricultural sector: Fertilizing
				5	5. Agricultural sector: Harvesting
				6	6. Agricultural sector: Seeding
				7	7. Construction sector
				8	8. Teaching/School work
				9	9. Driver
				10	10. Office worker
				11	11. Army/Police
				12	12. Retail sector (shop, restaurant, etc.)
				13	13. NGOs/cooperative
				14	14. Mechanic/garage worker
				15	15. Government administration
				16	16. Domestic work for another household (e.g. gardener, cleaner, nanny)
				17	17. Retired/receives pension
				18	18. Trader/middleman
				19	19. Fishing
				96	96. Other, specify
				NA	NA
				DK	DK
repeat_multiplicity	begin repeat	begin repeat_multiplicity			
c1_salact_one	select_one activity	Please select		1	1. Touristic sector
				2	2. Extractive sector
				3	3. Agricultural sector: Weeding
				4	4. Agricultural sector: Fertilizing
				5	5. Agricultural sector: Harvesting
				6	6. Agricultural sector: Seeding
				7	7. Construction sector
				8	8. Teaching/School work

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Variable	Question	Instructions	Type	Code	Response
				9	9. Driver
				10	10. Office worker
				11	11. Army/Police
				12	12. Retail sector (shop, restaurant, etc.)
				13	13. NGOs/cooperative
				14	14. Mechanic/garage worker
				15	15. Government administration
				16	16. Domestic work for another household (e.g. gardener, cleaner, nanny)
				17	17. Retired/receives pension
				18	18. Trader/middleman
				19	19. Fishing
				96	96. Other, specify
				NA	NA
				DK	DK
c1b_specify	If other, specify		text		
Use_for_activities	Does your household provide most of the equipment/tools used to perform this activity?		select_one equip	1	1. Yes, the employer provides most of the equipment/tools
				2	2. No, the person uses mostly their own equipment/tools
				96	96. Other, specify
equip_other	If other, specify		text		
c3_employer	Who is ${name_display}'s employer for this activity?	Select option 6. if self-employed. Probe: Who do you work for?	select_one employer	1	1. NGO project
				2	2. Government administration
				3	3. Individual
				4	4. Cooperative
				5	5. Private company or informal private enterprise
				6	6. Self-employment
				96	96. Other, specify
				NA	NA
				DK	DK
c3b_employer	If other, specify		text		
Bb14_selfemploy	If self-employed, what is the income that ${name_display} receives from this activity per year? In RWF		integer		
work_month	Which months has ${name_display} worked on this particular activity in the last 12 months? Multiple choice		select_multiple months	1	January
				2	February
				3	March

Variable	Question	Note	Type	Code	Label
				4	April
				5	May
				6	June
				7	July
				8	August
				9	September
				10	October
				11	November
				12	December
				13	Throughout the year (this does not necessarily mean full-time)
				NA	NA
				DK	DK
Bb7_Work_day_permonth	Usually, how many working days per month?	Assume 30 days per month. Indicate 22 days if the person works every Monday to Friday.	integer		
Bb8_Work_hours_perday	Usually, how many working hours per day of work?		integer		
c9_migration	Does this activity involve migration to other regions/areas?	I.e. more than 1 month away	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
c10_migrationregion	If yes, to which region/district?		select_one migrationregion	1	Bugesera
				2	Burera
				3	Gakenke
				4	Gasabo
				5	Gatsibo
				6	Gicumbi
				7	Gisagara
				8	Huye
				9	Kamonyi
				10	Karongi
				11	Kayonza
				12	Kicukiro
				13	Kirehe
				14	Muhanga
				15	Musanze
				16	Ngoma

Variable	Description	Note	Type	Code	Value
				17	Ngororero
				18	Nyabihu
				19	Nyagatare
				20	Nyamagabe
				21	Nyamasheke (other places in Nyamasheke)
				22	Nyanza
				23	Nyarugenge
				24	Nyaruguru
				25	Rubavu
				26	Ruhango
				27	Rulindo
				28	Rusizi
				29	Rutsiro
				30	Rwamagana
				31	Abroad
				96	Other, specify
				NA	NA
				DK	DK
c10_abroad	If abroad, indicate the country		text		
c10b_migrationregion	If other, specify		text		
c11_migrationdate	If yes, indicate month(s) away		select_multiple months	1	January
				2	February
				3	March
				4	April
				5	May
				6	June
				7	July
				8	August
				9	September
				10	October
				11	November
				12	December
				13	Throughout the year (this does not necessarily mean full-time)
				NA	NA
				DK	DK
c11_transport	How does ${name_display} usually commute to his/her regular workplace for this activity?	This refers to the place where the person sleeps.	select_one transport	1	1. On foot
				2	2. By bicycle

Variable	Question	Notes	Type	Code	Option
				3	3. By your own car
				4	4. By motorbike
				5	5. By minibus
				6	6. By taxi
				7	7. By boat
				96	96. Other, specify
				NA	NA
				DK	DK
c11_transport_other	If other, specify		text		
Bb13_travel_pay	How much does ${name_display} usually have to pay for transportation related to this activity? One way, in RWF.	Skip if don't know.	integer		
Bb12_travel	How long is this commute usually? One way, in minutes.	If they don't know, skip the question. If the activity is undertaken at the place where the person sleeps, put 0.	integer		
Bb15_paymenttype	How are ${name_display}'s wages paid for this activity?	This is about the basis of the payment, not the time when it is paid! (e.g. someone paid on a daily basis 100 RWF, but receiving the wage at the end of every week, is considered 'daily wage'!)	select_multiple paymenttype	1	1. Daily wage
				2	2. 15-day intervals
				3	3. Monthly wage
				4	4. Based on specific contract/work/service (e.g. lump sum payment)
				5	5. Piece or task rate wages (per specific quantity or completed task)
				6	6. On commission (percentage of profits/sales)
				96	96. Other, specify
				NA	NA
				DK	DK
Bb15_paymenttype_other	If other, specify payment		text		
Bb15_daily_cash_kind	Daily wage: Is ${name_display} paid in cash or in kind for the daily wage?	In relation to this activity	select_one cash_kind	1	1. In cash
				2	2. In kind
Bb15_daily_cash	Daily wage: How high is ${name_display}'s daily wage? In RWF	In relation to this activity	integer		
Bb15_daily_kind	Daily wage: What does ${name_display} receive as daily wage?	In relation to this activity	text		
Bb15_monthly_cash_kind	Monthly wage: Is ${name_display} paid in cash or in kind for the monthly wage?	In relation to this activity	select_one cash_kind	1	1. In cash
				2	2. In kind

Variable	Question	Note	Type	Code	Label
Bb15_monthly_cash	Monthly wage: How high is ${name_display}'s monthly wage? In RWF	In relation to this activity	integer		
Bb15_monthly_kind	Monthly wage: What does ${name_display} receive as monthly wage?	In relation to this activity	text		
Bb15_task	Piece rate/task: Please describe the work required for payment	In relation to this activity	text		
Bb15_task_cash_kind	Piece rate/task: Is ${name_display} paid in cash or in kind per piece rate/task?	In relation to this activity	select_one cash_kind	1	1. In cash
				2	2. In kind
Bb15_task_cash	Piece rate/task: How much is ${name_display} paid per piece rate/task? In RWF	In relation to this activity	integer		
Bb15_task_kind	Piece rate/task:What does ${name_display} receive per piece rate/task?	In relation to this activity	text		
Bb15_amount	Piece rate/task: How much (e.g. in kg) does ${name_display} achieve on a normal day? Specify unit	In relation to this activity	text		
Bb19_childcare	Who takes care of the baby when ${name_display} is undertaking this activity?	If respondent is a woman with a young child and with a job, ask for child care situation where she works	select_multiple childcare	1	1. I can take it in my workplace
				2	2. My Husband/partner takes care of the baby
				3	3. Somebody of my family can take care of the baby (women)
				4	4. Somebody of my family can take care of the baby (men)
				5	5. Child care is offered at my workplace
				6	6. Professional child care
				96	96. Other, specify
				NA	NA
				DK	DK
Bb19_childcare_other	If other, specify		text		
Bb20_contract	What kind of contract does ${name_display} have for this activity?		select_multiple contract	1	1. Written contract
				2	2. Oral contract
				4	3. On call only
				NA	NA
				DK	DK
Bb_work_conditions	Does ${name_display}'s company or employer provide any of the following (multiple choice):		select_multiple conditions	1	1. Child care
				2	2. Paid maternity leave (only women)
				3	3. Drinking water at the work place
				4	4. Clean toilet facilities
				5	5. Meals/drinks
				6	6. Insurance (health or accident)
				7	7. Housing

				Code	Value
				8	8. Transports (daily travelling from home)
				9	9. Paid sick leave
				10	10. Pension entitlements
				11	11. Overtime payment
				12	12. Safety training
				13	13. Safety material
				14	14. Pre-paid card for phone
				15	15. Nothing
				96	96. Other, specify
				NA	NA
				DK	DK
Bb_work_conditions_specify	text	If other, specify			
repeat_multiplicity	end repeat				
repeat_wage_employment	end repeat				
note_labour_exchange	note	Module C: Unpaid agricultural work outside the household			
cd2_labour_exchange	select_one yes_no	Do any members of your household do any unpaid agricultural work **outside** of your household?	Don't count non-agricultural work and exclude all forms of umuganda!	1	yes
				0	no
				NA	NA
				DK	DK
howmany_exchange	select_multiple hhmember	If yes, which household member(s)?		1	${fam_name1}
				2	${fam_name2}
				3	${fam_name3}
				4	${fam_name4}
				5	${fam_name5}
				6	${fam_name6}
				7	${fam_name7}
				8	${fam_name8}
				9	${fam_name9}
				10	${fam_name10}
				11	${fam_name11}
				12	${fam_name12}
				13	${fam_name13}
				14	${fam_name14}
				15	${fam_name15}
repeat_cd	begin repeat	Labour exchanges			

Name	Type	Label	#	Choice
Cd1_household_member	select_one hhmember	Please select	1	${fam_name1}
			2	${fam_name2}
			3	${fam_name3}
			4	${fam_name4}
			5	${fam_name5}
			6	${fam_name6}
			7	${fam_name7}
			8	${fam_name8}
			9	${fam_name9}
			10	${fam_name10}
			11	${fam_name11}
			12	${fam_name12}
			13	${fam_name13}
			14	${fam_name14}
			15	${fam_name15}
name_display2	calculate			
Cd2_exchange_task	select_one unpaid_act	What is the unpaid agricultural activity that ${name_display2} works on the most?	1	1. coffee harvesting
			2	2. coffee weeding
			3	3. coffee fertilising
			4	4. coffee seeding and/or planting
			5	5. coffee processing
			6	6. fishing
			96	96. Other, specify
Cd2_exchange_task_other	text	If other, specify activity and type(s) of crop!		
cd5_months	select_multiple months	Which months has ${name_display2} worked for this particular activity in the last 12 months? Multiple choice answer	1	January
			2	February
			3	March
			4	April
			5	May
			6	June
			7	July
			8	August
			9	September
			10	October
			11	November
			12	December
			13	Throughout the year (this does not necessarily mean full-time)

Variable	Question	Hint	Type	Response option	Code	
					NA	NA
					DK	DK
cd6_work_days	Usually, how many working days per year?		integer			
Cd7_hours	Usually, how many working hours per day of work?		integer			
Cd3_who	Who does ${name_display2} work for the most in relation to this activity?		select_multiple who_employ	1. Family (sons of respondent or of his/her spouse)	1	
				2. Family (daughter of respondent or of his/her spouse)	2	
				3. Family (parents of respondent or of his/her spouse)	3	
				4. Family (other)	4	
				5. Friends	5	
				6. Cousins/other relatives	6	
				7. Government	7	
				8. Private company or informal private enterprise	8	
				96. Other, specify	96	
				NA	NA	
				DK	DK	
Cd3_who_other	If other, specify		text			
Cd4_return	Does ${name_display2} receive anything in return from this employer?		select_multiple return	1. No return	1	
				2. Cash	2	
				3. Goods	3	
				4. Labour	4	
				5. Food or drink	5	
				96. Other, specify	96	
Cd4_return_specify	If other, specify		text			
repeat_cd			end repeat			
note_modulecd_agrprod	Module Da: Own-account farming (on owned and rented land): crop production		note			
cd1_agr_production	Did your household have any agricultural production during the last 12 months? **Include all cultivation the household owns, even if not matured or harvested yet, but not that of possible tenants.**	This production could be for your own consumption or for selling.	select_one yes_no	yes	1	
				no	0	
				NA	NA	
				DK	DK	
cd1_how_many	Which are the 3 most important crops that have been cultivated by this household during the last 12 months?	This production could be for your own consumption or for selling.	select_multiple crop	Arabica coffee (indicate measurements for red cherries!)	1	
				Robusta coffee (indicate measurements for red cherries!)	2	

			3	Excelsa coffee (indicate measurements for red cherries!)
			4	Typica coffee (indicate measurements for red cherries!)
			5	Bourbon coffee (indicate measurements for red cherries!)
			6	Maize
			7	Irish Potatoes
			8	Sweet potatoes
			9	Wheat
			10	Rice
			11	Pyretrum
			12	Cassava (indicate measurements for fresh cassava!)
			13	Cabbages/tomato/other vegetables
			14	Beans (indicate measurements for dry beans!)
			15	Peas
			16	Soya beans
			17	Sorghum
			18	Fruits
			19	Wine banana
			20	Plantain
			21	Cooking banana
			22	Tea
			23	Fruit banana
			93	93. Other 1, specify
			94	94. Other 2, specify
			95	95. Other 3, specify
			NA	NA
			DK	DK
repeat_agrprod	Repeat agricultural production	begin repeat		
cd2_crop	Please select	select_one crop	1	Arabica coffee (indicate measurements for red cherries!)
			2	Robusta coffee (indicate measurements for red cherries!)
			3	Excelsa coffee (indicate measurements for red cherries!)
			4	Typica coffee (indicate measurements for red cherries!)
			5	Bourbon coffee (indicate measurements for red cherries!)

Variable	Description	Type	Code	Label
			6	Maize
			7	Irish Potatoes
			8	Sweet potatoes
			9	Wheat
			10	Rice
			11	Pyrethrum
			12	Cassava (indicate measurements for fresh cassava!)
			13	Cabbages/tomato/other vegetables
			14	Beans (indicate measurements for dry beans!)
			15	Peas
			16	Soya beans
			17	Sorghum
			18	Fruits
			19	Wine banana
			20	Plantain
			21	Cooking banana
			22	Tea
			23	Fruit banana
			93	93. Other 1, specify
			94	94. Other 2, specify
			95	95. Other 3, specify
			NA	NA
			DK	DK
cd2_crop_other1	If other, specify	text		
cd2_crop_other2	If other, specify	text		
cd2_crop_other3	If other, specify	text		
cd3_area	Area cultivated in the most recent season of that crop	decimal		
cd3_area_unit	In what unit is the area measured?	select_one unit	1	Hectares
			2	Ares
			3	Square metres
			96	Other, specify
cd3_area_unit_other	If other, specify	text		
cd3_prod_unit	In what unit is the production measured?	text		

Variable	Description	Type			Value labels
cd4_prod	Total production of this crop (in ${cd3_prod_unit}, for the most recent harvest)	decimal			Use conversion tables and make sure you enter the type of crop asked (e.g. red coffee versus green coffee). If the respondent doesn't know, skip this question. If the crop has not matured to harvest, put 0.
cd5_prod	Production kept by the household for own consumption or gifts (in ${cd3_prod_unit}, for the most recent harvest)	decimal			Use conversion tables and make sure you enter the type of crop asked (e.g. red coffee versus green coffee). If the respondent doesn't know, skip this question.
Ca07_seeding	Production kept for seed production (in ${cd3_prod_unit}, for the most recent harvest)	decimal			Use conversion tables and make sure you enter the type of crop asked (e.g. red coffee versus green coffee). If the respondent doesn't know, skip this question.
cd6s_sold	Does the household sell some of the produce?	select_one yes_no	1	yes	
			0	no	
			NA	NA	
			DK	DK	
cd6_sold	Production sold (in ${cd3_prod_unit}, for the most recent harvest)	decimal			Use conversion tables and make sure you enter the type of crop asked (e.g. red coffee versus green coffee). If the respondent doesn't know, skip this question.
cd8_source1	Where and to whom was it sold? Most important source	select_one market_source	1	1. Market
			2	2. Cooperative
			3	3. State
			4	4. Private company or informal private enterprise
			5	5. Middleman/intermediary
			6	6. Family/friends or other personal relations
			7	7. Sell directly from home
			96	96. Other, specify

Variable	Question / Text	Type	Code	Label
cd8_source1b	If other, specify	text		
who_sells1	Who sold it?	select_one hhemployer	1	1. Household head
			2	2. Spouse
			3	3. Both household head and spouse
			4	4. Other female household member
			5	5. Other male household member
cd8_source1price	What was the average price per ${cd3_prod_unit} sold for the most recent harvest? In RWF	integer		Use conversion tables and make sure you enter the price for the crop asked (e.g. red coffee versus green coffee). If the respondent doesn't know, skip this question.
cd8_pricenegotiated	Who set the price?	select_one prices_negotiated	1	1. Cooperative
			2	2. State
			3	3. Private company or informal private enterprise
			4	4. Middleman/intermediary
			5	5. By the farmers (your household)
			6	6. Based on negotiations between buyer and seller
			7	7. Local market
			96	96. Other, specify
cd8_payment_method	When was the household paid?	select_multiple payment_method	1	1. Before the harvest
			2	2. Upon the delivery of the product
			3	3. More than one month after the delivery of the product
			96	96. Other, specify
cd8_pricenegotiated_ot her	If other, specify	text		
other_market	Does the household sell to anybody else?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
ca12_source1	Where and to whom was it sold? Second most important source	select_one market_source	1	1. Market
			2	2. Cooperative
			3	3. State
			4	4. Private company or informal private enterprise
			5	5. Middleman/intermediary
			6	6. Family/friends or other personal relations
			7	7. Sell directly from home

Variable	Question	Note	Type	Code	Value label
ca12_source1b	If other, specify		text		
who_sells2	Who sold it?		select_one hhemployer		
				1	1. Household head
				2	2. Spouse
				3	3. Both household head and spouse
				4	4. Other female household member
				5	5. Other male household member
ca13_source1price	What was the average price per ${cd3_prod_unit} sold for the most recent harvest? In RWF	Use conversion tables and make sure you enter the price for the crop asked (e.g. red coffee versus green coffee). If the respondent doesn't know, skip this question.	integer		
ca14_pricenegotiated	Who set the price?		select_one prices_negotiated		
				1	1. Cooperative
				2	2. State
				3	3. Private company or informal private enterprise
				4	4. Middleman/intermediary
				5	5. By the farmers (your household)
				6	6. Based on negotiations between buyer and seller
				7	7. Local market
				96	96. Other, specify
ca14_pricenegotiated_other	If other, specify		text		
ca15_payment_method	When was the household paid?		select_multiple payment_method		
				1	1. Before the harvest
				2	2. Upon the delivery of the product
				3	3. More than one month after the delivery of the product
				96	96. Other, specify
payment_method_other	If other, specify		text		
repeat_agrprod			end repeat		
value_chain	Module Db: Own-account farming (on owned and rented land): value chain for most important cash crop		note		
Cb1_crop	What was the most important cash crop in terms of income produced by the household during the last 12 months?	All questions in this section refer only to this one crop.	select_one cash_crop		
				1	Arabica coffee (indicate measurements for red cherries!)
				2	Robusta coffee (indicate measurements for red cherries!)
				3	Excelsa coffee (indicate measurements for red cherries!)

Variable	Type	Description	Code	Label
			4	Typica coffee (indicate measurements for red cherries!)
			5	Bourbon coffee (indicate measurements for red cherries!)
			6	Maize
			7	Irish Potatoes
			8	Sweet potatoes
			9	Wheat
			10	Rice
			11	Pyretrum
			12	Cassava (indicate measurements for fresh cassava!)
			13	Cabbages/tomato/other vegetables
			14	Beans (indicate measurements for dry beans!)
			15	Peas
			16	Soya beans
			17	Sorghum
			18	Fruits
			19	Wine banana
			20	Plantain
			21	Cooking banana
			22	Tea
			23	Fruit banana
			96	96. Other, specify
			NA	NA
			DK	DK
Cb1_crop_other	text	If other, specify		
product_lebel	select_one product_lebel	For this crop, does the household have any specific production label or certification?	1	1. Organic
			2	2. Fairtrade
			3	3. Both
			4	4. No
			96	96. Other, specify
			NA	NA
			DK	DK
product_lebel_other	text	If other, specify		
Cb3c_time_cultivate	select_one time	How long has your household been cultivating this crop for commercial purposes? Whether on this or a different type of land.	1	1. More than 20 years
			2	2. 10 to 20 years
			3	3. 5 to 10 years
			4	4. 0 to 5 years

Variable	Question	Type	Code	Label
			NA	NA
			DK	DK
Cb4_price	Was the price and/or quantity agreed by contract before the harvest (contract farming)?	select_one price	1	1. No, neither was agreed upon
			2	2. Yes, the price was agreed upon
			3	3. Yes, the quantity was agreed upon
			4	4. Yes, price and quantity were agreed upon
Cb4_price_agreement	Did the buyer stick to the agreed price/quantity?	select_one honour	1	1. Yes
			2	2. No, the buyer lowered the price/quantity
			3	3. No, the buyer increased the price/quantity
Cb5_trend	What is the trend of production of this crop in your household as compared to five years ago?	select_one trend	1	1. Increasing
			2	2. Almost similar
			3	3. Decreasing
			96	96. Other, specify
Cb5_trendother	If other, specify	text		
Cb6_input_increase	How do you explain this trend?	select_multiple input_increase	1	1. Change in the quality of the planting material
			2	2. Change in crop variety
			3	3. Change in irrigation system
			4	4. Change in the control of insects/pest and diseases
			5	5. Change in production skills
			6	6. Change in quality of labour
			7	7. Change in agricultural area
			8	8. Maturing of the plant
			9	9. Change in the quantity of labour
			10	10. Change in the use of fertiliser
			11	11. Change in weather conditions
			96	96. Other, specify
Cb6_input_increase_other	If other, specify	text		
Cb7_post_harvest_activity	Does your household perform any activities after harvesting the crop and before selling it?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
Cb7_post_harvest	What are the activities performed by the household after harvesting the crop?	select_multiple post_harvest	1	1. grading
			2	2. pulping
			3	3. ferminting
			4	4. cleaning
			5	5. drying
			6	6. storage

Variable	Description	Note	Type	Code	Label
				7	7. milling (even if they pay to use milling services as long as they keep ownership of the produce)
				8	8. packaging
				9	9. slice
				10	10. labelling
				96	96. Other, specify
Cb7_other	If other, specify		text		
storage	Does the household store some of this produce (i.e. more than 1 month)?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
Cb9_purpose	What was the purpose of storing the produce?		select_multiple purpose	1	1. For food only
				2	2. To catch a higher price later
				3	3. Both food and a higher price
				96	96. Other, specify
Cb9_purpose_other	If other, specify		text		
Cb10_where_storage	Where did the household store the produce?		select_multiple where_storage	1	1. At home
				2	2. At communal produce reserve
				96	96. Other, specify
Cb11_notstore	If the household did not store the produce, what was the reason?		select_multiple why_notstore	1	1. Did not know where to store
				2	2. Did not know how to store
				3	3. No extra produce to store
				5	5. To get immediate income
				96	96. Other, specify
Cb11_notstore_other	If other, specify		text		
note_moduledb_livesto ck	Module Dc: Own-account farming (on owned and rented land): livestock production		note		
dc_fishing	Did your household do any own-account fishing during the last 12 months?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
dc_fishing_income	How much total income did your household get from selling fish or fish products in the last 12 months? In RWF		integer		
db3_livestock	Has your household owned any of the following in the last 12 months?	Cats and dogs don't count.	select_multiple livestock	1	1. Cows
				2	2. Pigs
				3	3. Goats
				4	4. Sheep

name	label	type	hint	value	value label
				5	5. Chicken
				6	6. Ducks
				7	7. Rabbits
				8	8. Beehives
				9	9. Turkeys
				10	10. Mice
				93	93. Other 1, specify
				94	94. Other 2, specify
				95	95. Other 2, specify
				97	97. None
groupdb2_livestock		begin group			
db4_cows	How many cows?	integer			
db4_pigs	How many pigs?	integer			
db4_goats	How many goats?	integer			
db4_sheep	How many sheep?	integer			
db4_chicken	How many chicken?	integer			
db4_ducks	How many ducks?	integer			
db4_rabbits	How many rabbits?	integer			
db4_bees	How many beehives?	integer			
db4_turkeys	How many turkeys?	integer			
db4_mice	How many mice?	integer			
db4_specify1	If other, specify	text			
db4_specify_other1	How many of these animals?	integer			
db4_specify2	If other, specify	text			
db4_specify_other2	How many of these animals?	integer			
db4_specify3	If other, specify	text			
db4_specify_other3	How many of these animals?	integer			
dbb1_incomelivestock	How much total income did your household get last year from selling this livestock? In RWF	integer			
dbb2_incomelivestock2	How much total income did your household get last year from selling products DERIVED from this livestock? In RWF	integer	E.g. eggs, wool, etc.		
		end group			
agriculture_input	Module De: Own-account farming (on owned and rented land): agricultural practices and inputs	note			
db1b_agriculture_input	Do you or anybody in your household use or have?	select_multiple agri_input		1	1. Pesticides
				2	2. Hybrid seeds

name	label	hint	type	code	choice
				3	3. Seed from previous year
				5	5. Manure
				6	6. Mulching
				7	7. Ox plough
				8	8. Irrigation for crops
				9	9. Seed storage/production facilities
				10	10. Chemical fertilizers
				11	11. Coffee skin manure
				96	96. Other, specify
				97	97. None
				NA	NA
				DK	DK
agri_tool	Agricultural tools		note		
agriculture_tool	Does the household own any of the following:	If the item is not functional anymore, do not count it. Owning means that the household is free to sell or dispose of that item.	select_multiple agriculture_tool	1	1. Plough
				2	2. Axe
				3	3. Plumbing machine
				5	5. Threshing machine
				6	6. Cart
				7	7. Spray machine
				8	8. Hoe/Fork
				9	9. Rice miller
				10	10. Wood tray
				11	11. Cement dried ground
				12	12. Lawnmower
				13	13. Pulping machine
				14	14. Coffee miller
				96	96. Other, specify
				NA	NA
				DK	DK
note_modulecc_employmentcreation_temp	Module E: employment creation		note		
cc5	Has your household hired any paid workers in the last 12 months?	Include work on non-agricultural activities and undertaken on crops not yet harvested. This can be on owned or rented land.	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
hired_labour			begin group		
activities_hired_work			select_multiple hired_work	1	1. coffee harvesting

Variable	Label	Instruction	Type	Code	Option
	Which activities have been undertaken by paid workers in the last 12 months?			2	2. coffee weeding
				3	3. coffee fertilising
				4	4. coffee seeding and/or planting
				5	5. coffee processing
				6	6. domestic worker/maid/cook/nanny/housekeeper
				7	7. shop or business assistant
				93	93. Other 1, specify
				94	94. Other 2, specify
				95	95. Other 3, specify
activities_hired_work1	If other, specify activity and type(s) of crop if necessary		text		
activities_hired_work2	If other, specify activity and type(s) of crop if necessary		text		
activities_hired_work3	If other, specify activity and type(s) of crop if necessary		text		
activities_most_work	For which of these have you hired the most workers in the last 12 months?	Select up to 5 activities	select_multiple hired_work	1	1. coffee harvesting
				2	2. coffee weeding
				3	3. coffee fertilising
				4	4. coffee seeding and/or planting
				5	5. coffee processing
				6	6. domestic worker/maid/cook/nanny/housekeeper
				7	7. shop or business assistant
				93	93. Other 1, specify
				94	94. Other 2, specify
				95	95. Other 3, specify
activities_most_work1	If other, specify activity and type(s) of crop if necessary		text		
activities_most_work2	If other, specify activity and type(s) of crop if necessary		text		
activities_most_work3	If other, specify activity and type(s) of crop if necessary		text		
repeat_cc5	Repeat hired labour		begin repeat		
cc2_2_activity_hired	Please select		select_one hired_work	1	1. coffee harvesting
				2	2. coffee weeding
				3	3. coffee fertilising
				4	4. coffee seeding and/or planting
				5	5. coffee processing

Variable	Question	Notes	Type	Codes
				6. domestic worker/maid/cook/nanny/housekeeper
				7. shop or business assistant
				93. Other 1, specify
				94. Other 2, specify
				95. Other 3, specify
cc2_2_activity_hired1	If other, specify activity and type(s) of crop if necessary		text	
cc2_2_activity_hired2	If other, specify activity and type(s) of crop if necessary		text	
cc2_2_activity_hired3	If other, specify activity and type(s) of crop if necessary		text	
how_many_people	How many different people did your household hire for this activity?	Count every person only one time	integer	
who_employs	Who is employing this (these) person(s)?		select_one hhemployer	1. Household head; 2. Spouse; 3. Both household head and spouse; 4. Other female household member; 5. Other male household member
cc6_female_labour1	How many of these were female?	Put number of female(s). Put 0 if none.	integer	
hire_period	Did you hire them multiple times in the past 12 months?	Permanent employees count as 1 time only.	select_one yes_no	1 yes; 0 no; NA NA; DK DK
hire_onetime	How many days did you hire them for? PER PERSON	If the respondent doesn't know the answer, skip the question.	integer	
times			begin group	
m1_a	How many people did you hire the first time?	If the respondent doesn't know the answer, skip the question.	integer	
m1_b	How many days did you hire them for the first time? PER PERSON	If the respondent doesn't know the answer, skip the question.	integer	
m1_c	How many people did you hire the second time?	If the respondent doesn't know the	integer	

Variable	Question	Note	Type		
		answer, skip the question.	integer		
m1_d	How many days did you hire them for the second time? PER PERSON	If the respondent doesn't know the answer, skip the question.	integer		
m1_e	How many people did you hire the third time?	If the respondent doesn't know the answer, skip the question.	integer		
m1_f	How many days did you hire them for the third time? PER PERSON	If the respondent doesn't know the answer, skip the question.	integer		
m1_g	How many people did you hire the fourth time?	If the respondent doesn't know the answer, skip the question.	integer		
m1_h	How many days did you hire them for the fourth time? PER PERSON	If the respondent doesn't know the answer, skip the question.	integer		
m1_i	How many people did you hire the fifth time?	If the respondent doesn't know the answer, skip the question.	integer		
m1_j	How many days did you hire them for the fifth time? PER PERSON	If the respondent doesn't know the answer, skip the question.	integer		
m1_k	How many people did you hire the sixth time?	If the respondent doesn't know the answer, skip the question.	integer		
m1_l	How many days did you hire them for the sixth time? PER PERSON	If the respondent doesn't know the answer, skip the question.	integer		
			end group		
cc_paymenttype	How are wages paid for this activity?	This is about the basis of the payment, not the time when it is paid! (e.g.	select_multiple paymenttype	1	1. Daily wage
				2	2. 15-day intervals
				3	3. Monthly wage

		someone paid on a daily basis 100 RWF, but receiving the wage at the end of every week, is considered 'daily wage'!			4	4. Based on specific contract/work/service (e.g. lump sum payment)
					5	5. Piece or task rate wages (per specific quantity or completed task)
					6	6. On commission (percentage of profits/sales)
					96	96. Other, specify
					NA	NA
					DK	DK
cc_paymenttype_other	If other, specify payment		text			
cc_daily_cash_kind	Daily wage: Is the daily wage paid in cash or in kind?	In relation to this activity	select_one cash_kind		1	1. In cash
					2	2. In kind
cc_daily_cash	Daily wage: How high is the daily wage your household pays? In RWF	In relation to this activity	integer			
cc_daily_kind	Daily wage: What does your household give as daily wage?	In relation to this activity	text			
cc_monthly_cash_kind	Monthly wage: Is the monthly wage paid in cash or in kind?	In relation to this activity	select_one cash_kind		1	1. In cash
					2	2. In kind
cc_monthly_cash	Monthly wage: How high is the monthly wage your household pays? In RWF	In relation to this activity	integer			
cc_monthly_kind	Monthly wage: What does your household give as monthly wage?	In relation to this activity	text			
cc_task	Piece rate/task: Please describe the task required for payment	In relation to this activity	text			
cc_task_cash_kind	Piece rate/task: Is the piece rate or task paid in cash or in kind?	In relation to this activity	select_one cash_kind		1	1. In cash
					2	2. In kind
cc_task_cash	Piece rate/task: How much does your household pay per piece rate or task? In RWF	In relation to this activity	integer			
cc_task_kind	Piece rate/task: What does your household give per piece rate or task?	In relation to this activity	text			
cc_amount	Piece rate/task: How much (e.g. in kg) does an average worker achieve on a normal day? Specify unit	In relation to this activity	text			
cc_gender	Is the payment the same for women and men?	In relation to this activity	select_one yes_no		1	yes
					0	no
					NA	NA
					DK	DK
cc_gender_other	If not, how does it differ?	In relation to this activity	text			
repeat_cc5			end repeat			

additional_q	additional_qa	note	In relation to all hired workers	Additional questions		
	additional_qa	begin group				
ccl1_provide		select_multiple provide		Does your household provide some extras: food/drinks, health insurance, and/or transport? (More than 1 answer possible)	1	1. Meal / drinks
					2	2. Insurance (health or accident)
					3	3. Transports (daily traveling from home)
					4	4. Pre-paid card (phone)
					5	5. Accomodation in the house
					6	6. Take care when sick and send back home if necessary
					96	96. Other, specify
ccl1_provide_other		text		If other, specify		
labour_from		select_multiple labour_from		Where are the workers from?	1	Bugesera
					2	Burera
					3	Gakenke
					4	Gasabo
					5	Gatsibo
					6	Gicumbi
					7	Gisagara
					8	Huye
					9	Kamonyi
					10	Karongi
					11	Kayonza
					12	Kicukiro
					13	Kirehe
					14	Muhanga
					15	Musanze
					16	Ngoma
					17	Ngororero
					18	Nyabihu
					19	Nyagatare
					20	Nyamagabe
					21	Nyamasheke: same village
					22	Nyamasheke: same cell
					23	Nyamasheke: same sector
					24	Nyanza
					25	Nyarugenge
					26	Nyaruguru
					27	Rubavu

Variable	Question	Notes	Type	Code	Response
				28	Ruhango
				29	Rulindo
				30	Rusizi
				31	Rutsiro
				32	Rwamagana
				33	Abroad
				96	Other, specify
				NA	NA
				DK	DK
labour_abroad	If abroad, indicate the country		text		
labour_from_other	If other, specify		text		
			end group		
hired_labour			end group		
cc2_unpaid	Which agricultural activities on your farm are undertaken by household members and/or unpaid workers? Select all that apply.	This can be on owned or rented land. Include also work undertaken on crops not yet harvested.	select_multiple crop_livestock	1	1. coffee harvesting
				2	2. coffee weeding
				3	3. coffee fertilising
				4	4. coffee seeding and/or planting
				5	5. coffee processing
				6	6. fishing
				7	7. other agricultural activities including supervision
				97	97. None
repeat_cc2	Repeat own-account farming		begin repeat		
cc2_2_activity	Please select		select_one crop_livestock	1	1. coffee harvesting
				2	2. coffee weeding
				3	3. coffee fertilising
				4	4. coffee seeding and/or planting
				5	5. coffee processing
				6	6. fishing
				7	7. other agricultural activities including supervision
				97	97. None
cc2_activity_month	What are the months during which said activity is performed? (Multiple choice answer)		select_multiple months	1	January
				2	February
				3	March
				4	April
				5	May
				6	June
				7	July

Variable	Question	Note	Type	Code	Label
				8	August
				9	September
				10	October
				11	November
				12	December
				13	Throughout the year (this does not necessarily mean full-time)
				NA	NA
				DK	DK
household_work	Are members of your household participating in this activity?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
cc3_member	Who are the people from the household participating in said activity? (Select from household member list)		select_multiple hhmember	1	${fam_name1}
				2	${fam_name2}
				3	${fam_name3}
				4	${fam_name4}
				5	${fam_name5}
				6	${fam_name6}
				7	${fam_name7}
				8	${fam_name8}
				9	${fam_name9}
				10	${fam_name10}
				11	${fam_name11}
				12	${fam_name12}
				13	${fam_name13}
				14	${fam_name14}
				15	${fam_name15}
cc4_work_day	Usually, how many working days are spent on this activity **per adult household member per year?**	Exclude the children	integer		
cc12_exchange_labour	Does your household regularly use any unpaid work by non-household members for this activity?	I.e. for more than 5 days	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
cc12_exchange_labour_yes	If yes, how many people?		integer		
cc13_gender	How many of these are female?	Put number of female(s). Put 0 if none.	integer		

Variable	Question	Note	Type	Code	Label
ccl4_number	Usually, how many working days are spent on this activity **per unpaid person per year?**		integer		
ccl5_return	Does your household provide anything in return?		select_multiple return	1	1. No return
				2	2. Cash
				3	3. Goods
				4	4. Labour
				5	5. Food or drink
				96	96. Other, specify
ccl5_return_other	If other, specify		text		
repeat_cc2			end repeat		
note_moduleDa_land	Module F: Land		note		
da1_ownland	Do you or anybody in your household own any land (including housing land)?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
groupDa_land			begin group		
daa_plots	If yes, how many plots does your household own in total?		integer		
daa_toal_land	Indicate total area (including housing land)	You might have to add together the different plot sizes.	decimal		
daa_toal_land_unit	In what unit is the area measured?		select_one unit	1	Hectares
				2	Ares
				3	Square metres
				96	Other, specify
daa_toal_land_unit_oth er	If other, specify		text		
registered	Is this land registered?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
registered_reason	Why did your household not register it?		select_multiple registration	1	1. The process is too expensive.
				2	2. I did not know how to register it.
				3	3. I did not know that I should register it.
				4	4. I fear that my claim would be disputed.
				96	96. Other, specify
registered_reason_other	If other, specify		text		

dab_crop_land	Area used for crop production	Include land that is used jointly for crop and livestock production.	decimal		
dab_crop_unit	In what unit is the area measured?		select_one unit	1	Hectares
				2	Ares
				3	Square metres
				96	Other, specify
dab_crop_unit_other	If other, specify		text		
dab_crop_land_how_fa r	How far is your household's largest plot for crop production from the place where you sleep? In km		select_one how_far	1	1. 0-3 km
				2	2. 3-5 km
				3	3. 6-10 km
				4	4. More than 10 km away
				NA	NA
				DK	DK
dac_livestock_land	Area used for pasture only	Do not include land already counted as crop land - even if livestock grazes on it.	decimal		
dac_livestock_unit	In what unit is the area measured?		select_one unit	1	Hectares
				2	Ares
				3	Square metres
				96	Other, specify
dac_livestock_unit_oth er	If other, specify		text		
dae_owner	Who owns most of the land?		select_one house_ownership	1	1. Full ownership by both spouses
				2	2. Full ownership (husband)
				3	3. Full ownership (wife)
				4	4. Co-ownership with parents, sibling, relatives, etc.
				5	5. Renting
				6	6. Free renting
				96	96. Other, specify
				NA	NA
				DK	DK
dae_owner_specify	If other, specify		text		
da2f_surfaceprod	How did your household acquire the land?		select_multiple how_aquired	1	1. Inheritance
				2	2. Gift/Donation
				3	3. Purchased
				4	4. Exchange

Variable	Question	Note	Type	Code	Label
				5	5. Dowry
				96	96. Other, specify
				NA	NA
				DK	DK
da2fa_other	If other, specify		text		
purchase_who	Who did your household purchase from?		select_one who	1	1. Cooperative
				2	2. Private person
				3	3. Company/concession
				4	4. Government
				5	5. Familiy member
				96	96. Other, specify
da2g_surfaceprod	When was this land acquired? Year	If it was acquired over multiple years, leave this question out.	integer		
da9_landcoop	Of the land that you own, does your household rent out or lend any land?	I.e. to someone else	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
da9b_plots	If yes, how many plots?		integer		
da9b_landcoop	Indicate total area	You might have to add together the different plot sizes.	decimal		
da9b_landcoop_unit	In what unit is the area measured?		select_one unit	1	Hectares
				2	Ares
				3	Square metres
				96	Other, specify
da9b_landcoop_unit_ot her	If other, specify		text		
Da3_rent_to	Who is your household renting/lending to?		select_one who	1	1. Cooperative
				2	2. Private person
				3	3. Company/concession
				4	4. Government
				5	5. Familiy member
				96	96. Other, specify
Da3_rent_to_other	If other, specify		text		
Da3_rent_pay	What is the basis of payment?		select_one basic	1	1. Daily
				2	2. Monthly
				3	3. Annually

Variable	Question	Hint	Type	Code	Label
Da3_rent_unitpay	In what unit is the household paid?		select_one unit_pay	96	96. Other, specify
				NA	NA
				DK	DK
				1	1. Fixed cash amount
				2	2. Share of harvest or sales value
				3	3. Gold
				4	4. Labour
				96	96. Other, specify
Da3_rent_recieve	How much is the household paid per year?		integer		
Da4_rent_to	Does your household rent in any land?	I.e. from someone else	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
Da4_rent_plot	If yes, how many plots?		integer		
Da4_rent_area	Indicate total area	You might have to add together the different plot sizes.	decimal		
Da4_rent_area_unit	In what unit is the area measured?		select_one unit	1	Hectares
				2	Ares
				3	Square metres
				96	Other, specify
Da4_rent_area_unit_other	If other, specify		text		
Da4_rent_who	Who is your household renting from?		select_one who	1	1. Cooperative
				2	2. Private person
				3	3. Company/concession
				4	4. Government
				5	5. Familiy member
				96	96. Other, specify
Da4_rent_who_other	If other, specify		text		
Da4_rent_pay	What is the basis of payment?		select_one basic	1	1. Daily
				2	2. Monthly
				3	3. Annually
				96	96. Other, specify
				NA	NA
				DK	DK
Da4_rent_unitpay	In what unit does your household pay?		select_one unit_pay	1	1. Fixed cash amount
				2	2. Share of harvest or sales value

Variable	Question	Note	Type	Code	Label
				3	3. Gold
				4	4. Labour
				96	96. Other, specify
Da4_rent_recieve	How much does your household pay per year?		integer		
Da5_otherland	In addition to owned or rented/sharecropped land, does your household have access to any other land?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
Da5_owner_other	If yes, what is other land?		text		
Da5_toal_land	Indicate total area	You might have to add together the different plot sizes.	decimal		
Da5_total_land_unit	In what unit is the area measured?		select_one unit	1	Hectares
				2	Ares
				3	Square metres
				96	Other, specify
Da5_total_land_unit_ot her	If other, specify		text		
Da5_owner	Who owns most of the land?		select_multiple house_ownership	1	1. Full ownership by both spouses
				2	2. Full ownership (husband)
				3	3. Full ownership (wife)
				4	4. Co-ownership with parents, sibling, relatives, etc.
				5	5. Renting
				6	6. Free renting
				96	96. Other, specify
				NA	NA
				DK	DK
Da5_owner_specify	If other, specify		text		
Da5_acquire	How did your household acquire the land?		select_multiple how_aquired	1	1. Inheritance
				2	2. Gift/Donation
				3	3. Purchased
				4	4. Exchange
				5	5. Dowry
				6	6. Still belongs to parents of respondent/spouse
				7	7. We built it
				8	8. Renting
				9	9. Free renting
				96	96. Other, specify

Variable	Question	Note	Type	Code	Label
Da5_acquire_other	If other, specify		text		
Da59purchase_who	Who did your household purchase from?		select_one who	1	1. Cooperative
				2	2. Private person
				3	3. Company/concession
				4	4. Government
				5	5. Familiy member
				96	96. Other, specify
Da5_aquiresl	When was this land acquired? Year	If it was acquired over multiple years, leave this question out.	integer		
sell_land	Has your household sold or lost any land in the last 10 years?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
how_sell	Total area that you sold/lost		decimal		
how_sell_unit	In what unit is the area measured?		select_one unit	1	Hectares
				2	Ares
				3	Square metres
				96	Other, specify
how_sell_unit_other	If other, specify		text		
sell_to_who	Who did your household sell/lose to?		select_one who	1	1. Cooperative
				2	2. Private person
				3	3. Company/concession
				4	4. Government
				5	5. Familiy member
				96	96. Other, specify
sell_to_who_specify	If other, specify		text		
if_company	Specify name of the company/concession		text		
compensation	Did your household receive any compensation?	That includes the selling price if applicable.	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
unit_pay	In what unit was your household compensated?		select_one unit_pay	1	1. Fixed cash amount
				2	2. Share of harvest or sales value
				3	3. Gold
				4	4. Labour
				96	96. Other, specify
unit_pay_other	If other, specify		text		

Variable	Question	Type	Code	Label	Notes
sell_land_kip	How much did your household receive for this land? In RWF	integer			
fair	Do you think this amount was fair?	select_one yes_no	1	yes	
			0	no	
			NA	NA	
			DK	DK	
why_sell	Why did your household sell/lose this land?	select_one why	1	1. Not selling would not have been accepted	
			2	2. I needed the money	
			96	96. Other, specify	
why_sell_specify	If other, specify	text			
note_moduleg	Module G: Assets & Poverty standards	end group			
groupdc_vehicles		note			
		begin group			
dc_vehicles	Does the household own any of the following:	select_multiple assets	2	Motorcycle	If the item is not functional anymore, do not count it. Owning means that the household is free to sell or dispose of that item.
			3	Bicycle	
			7	Basic mobile phone (not smartphone)	
			9	Television set	
			10	Fridge	
			12	Tablet	
			13	Radio	
			14	Cassette or CD player	
			15	Clock or Watch	
			16	Torch	
			17	Oil or petrol lamp	
			18	Metal or wodden bed	
			19	Table	
			21	Metal cooking pot	
			22	Plastic basin	
			23	Shoes for each adult	
			24	Blanket	
			25	Panga (knife)	
			26	Smartphone	
			96	96. Other, specify	
dc_vehiclesother	If other, specify	text			
dc12_cookingfuel	What is the fuel used in your household for cooking?	select_multiple fuel	1	1. Electricity	
			2	2. Gas	
			3	3. Kerosene	
			4	4. Coal / Lignite	

Variable	Question	Type	Code	Label
			5	5. Charcoal
			6	6. Wood
			7	7. Straw/shrubs/grass
			8	8. Animal dung
			9	9. No food cooked in household
			96	96. Other, specify
			NA	NA
			DK	DK
dc12_cookingfuel_other	If other, specify	text		
have_electricity	Does the household have electricity?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
		end group		
moduledc_houseassets	Housing	note		
housing		begin group		
dd_house	How many houses does your household own?	integer		
house_rent	Do you or any other household member rent out or lend any house?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
income_rent	Income in RWF per year of the house(s)	integer		
asset_rent	Do you or any other household member rent out or lend any other assets (e.g. tractor, vehicles, mill etc.).	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
income_sell	Income in RWF per year of these assets	integer		
dd_houseownership	For the main house used by your household, what is the ownership or rental arrangement?	select_one house_ownership	1	1. Full ownership by both spouses
			2	2. Full ownership (husband)
			3	3. Full ownership (wife)
			4	4. Co-ownership with parents, sibling, relatives, etc.
			5	5. Renting
			6	6. Free renting
			96	96. Other, specify
			NA	NA
			DK	DK
dd_houseownershipb	If other, specify	text		

Variable	Question	Type	Description	Code	Label
house_aquired	How was the house acquired?	select_one house_aquired	In relation to the main house used by your household	1	1. Inheritance
				2	2. Gift/Donation
				3	3. Purchased
				4	4. Exchange
				5	5. Dowry
				96	96. Other, specify
				NA	NA
				DK	DK
dd_sepkitchen	Is cooking done in a separate kitchen?	select_one yes_no	In relation to the main house used by your household	1	yes
				0	no
				NA	NA
				DK	DK
dd_sepkitchen2	Is cooking done outside?	select_one yes_no	In relation to the main house used by your household	1	yes
				0	no
				NA	NA
				DK	DK
dd_roof	What is the main material of the roof?	select_one roof	In relation to the main house used by your household	1	1. Concrete
				2	2. Wood
				3	3. Corrugated metal
				4	4. Cement/bricks
				5	5. Bamboo
				6	6. Leaves/grass
				96	96. Other, specify
				NA	NA
				DK	DK
dd_roof_other	If other, specify	text			
dd_wall	What is the main material of the walls?	select_multiple wall	In relation to the main house used by your household	1	1. Stones
				2	2. Baked bricks
				3	3. Unbaked bricks
				4	4. Wood
				5	5. Sticks and mud
				6	6. Sticks and mud covered with sand
				96	96. Other, specify
				NA	NA
				DK	DK
dd_wall_other	If other, specify	text			
dd_floor	What is the main material of the floors?	select_multiple floor		11	11. Earth/sand/dung
				21	21. Wood planks

Variable	Question	Relation/Hint	Type	Direction	Code	Label
					22	22. Palm/bamboo
					31	31. Parquet or polished wood
					32	32. Vinyl, asphalt strips or ceramic
					34	34. Cement
					96	96. Other, specify
					NA	NA
					DK	DK
dd_floor_specify	If other, specify		text			
groupde_wash			begin group			
de1_watersource	What is the main source of drinking water of your household?	In relation to the main house used by your household	select_one water_source		1	1. Private tap water
					2	2. Shared tap water (e.g. with neighbour)
					3	3. Village/community tap water
					5	5. Pump (both electric and hand)
					6	6. Collected Rain Water
					7	7. Surface Water (rivers, lakes etc.)
					8	8. Well
					9	9. Natural Spring
					10	10. Purchased water
					96	96. Other, specify
					NA	NA
					DK	DK
de1_watersource_specify	If other, specify		text			
de2_watertime	How much time do you need to go to this source of water?		select_one water_time	One way	1	1. < 15'
					2	2. 15'-30'
					3	3. 30'-60'
					4	4. > 60'
					NA	NA
					DK	DK
de3_drinking	Do you do something to your water before you drink it ?		select_multiple process		1	1. Nothing
					2	2. We boil it
					3	3. Solar disinfection
					4	4. Add chlorine/bleach or any other chemicals
					5	5. Filtration (with sand/ceramic etc.)
					6	6. Purchased drinking water
					NA	NA
					DK	DK

Variable	Question	Hint	Type	Code	Label
de4_latrine	Do you have any functioning latrines or toilets in your household (NOT SHARED WITH OTHER HOUSEHOLDS)?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
de5_latrinetype	What is the type of toilets that you have in your household?		select_multiple latrine	1	1. Pit latrine
				2	2. Pit latrine with ventilation
				3	3. Toilets with flush
				96	96. Other, specify
				NA	NA
				DK	DK
de5b_latrinetype	If other, specify		text		
			end group		
note_moduledf	Now we would like to ask you some questions about your financial capabilities. If you find some of these questions uncomfortable, don't hesitate to say that you don't want to answer.		note		
groupdf_financial	Module Z: Financial Capital		begin group		
df1_remi	Do you or anybody in this household RECEIVE any remittances?	I.e. from non-household members	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
df1b_whoremi	Who is sending this money?		select_multiple remittance_transfer	1	1. Family (son of respondent or of his/her spouse)
				2	2. Family (daughter of respondent or of his/her spouse)
				3	3. Family (father of respondent or of his/her spouse)
				4	4. Family (mother of respondent or of his/her spouse)
				5	5. Friends
				6	6. Cousins/other family
				7	7. Neighbours
				8	8. Domestic helper
				96	96. Other, specify
df1c_whoremi	If other, specify		text		
df_conditions	Does the recipient have to fulfill any conditions in order to receive this money?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK

Variable	Question	Instruction	Type	Code	Label
df_reasons	Specify the conditions please		text		
df2_howmuchremi	How much remittance money did your household receive in total last year? In RWF	Use the conversion tables provided	integer		
df1_transer	Do you or anybody in this household receive any other transfers/donations (e.g. cash transfers)?	Not including remittances mentioned above, more than one answer possible.	select_one yes_no	1 / 0 / NA / DK	yes / no / NA / DK
df1b_transer	Who is sending this money?		select_multiple transfer	1 / 2 / 3 / 4 / 5 / 96	1. NGO project / 2. Pension fund / 3. Government subsidies / 4. Cooperative / 5. Religious group / 96. Other, specify
df1c_transer	If other, specify		text		
df1c_conditions	Does the recipient have to fulfill any conditions in order to receive this money?		select_one yes_no	1 / 0 / NA / DK	yes / no / NA / DK
df1c_reasons	Specify the conditions please		text		
df2_howmuchtransfer	How much did your household receive in total last year from any other transfers/donations (e.g. cash transfers)? In RWF	Use the conversion tables provided	integer		
df3_accesscredit	IN THE PAST 12 MONTHS have you or anybody of your household received credit/loan or cash grant?		select_one yes_no	1 / 0 / NA / DK	yes / no / NA / DK
df3b_accesscredit_who	If yes, from whom?	Indicate main source	select_multiple credit_source	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 / 11 / 12	1. Bank/financial institution / 2. Informal schemes (money lender) / 3. Relative / 4. NGO / 5. Local or national government / 6. Customary credit system / 7. Village fund or neighbourhood savings group / 8. Cooperative / 9. Employer / 10. Landlord / 11. Friend/neighbour / 12. Shopkeeper/trader

Variable	Question	Type	Code	Label
			96	96. Other, specify
			NA	NA
			DK	DK
df3b_accesscredit_other	If other, specify	text		
df9	Do you or anybody in this household have any debts?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
df9_yes	If yes, to whom?	select_multiple credit_source	1	1. Bank/financial institution
			2	2. Informal schemes (money lender)
			3	3. Relative
			4	4. NGO
			5	5. Local or national government
			6	6. Customary credit system
			7	7. Village fund or neighbourhood savings group
			8	8. Cooperative
			9	9. Employer
			10	10. Landlord
			11	11. Friend/neighbour
			12	12. Shopkeeper/trader
			96	96. Other, specify
			NA	NA
			DK	DK
df9_yes_other	If other, specify	text		
df9_amount	What is the total household debt currently outstanding? In RWF	integer		
df9_interest_how	How is the interest rate paid?	select_one interest_how	1	1. In cash
			2	2. In kind
			NA	NA
			DK	DK
df9_interest	What is the interest rate in %?	integer		
df9_interest_unit	What time unit does the interest rate apply to?	select_one interest_unit	1	1. Interest rate per month
			2	2. Interest rate per year
			NA	NA
			DK	DK
df9_work	DURING THE PAST 12 MONTHS, have you or any member of your household had to work	select_one yes_no	1	yes
			0	no
			NA	NA

Variable	Question	Type	DK	DK
df9_work_who	for the person/institution who gave you loans, in order to repay part or all of the loan? For whom did this person have to work during THE PAST 12 MONTHS to pay off debt?	select_multiple credit_source	1	1. Bank/financial institution
			2	2. Informal schemes (money lender)
			3	3. Relative
			4	4. NGO
			5	5. Local or national government
			6	6. Customary credit system
			7	7. Village fund or neighbourhood savings group
			8	8. Cooperative
			9	9. Employer
			10	10. Landlord
			11	11. Friend/neighbour
			12	12. Shopkeeper/trader
			96	96. Other, specify
			NA	NA
			DK	DK
df9_work_who_other	If other, specify	text		
df_difficulties	Did you or another household member experience serious financial difficulties in THE LAST 12 MONTHS?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
df_coping	If yes, what did your household do to overcome these financial difficulties?	select_multiple coping	1	1. Sold livestock
			2	2. Sold land
			3	3. Leased out land
			4	4. Sold any other assets
			5	5. Worked for others
			6	6. Migration
			7	7. Sell food stocks
			96	96. Other, specify
			NA	NA
			DK	DK
df_coping_other	If other, specify	text		
df_saving_yes	Is someone in your household a member of a village fund for development?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
df6_informalsaving		select_one yes_no	1	yes

Variable	Question	Note	Type	Code	Label
	Is someone in your household a member of any informal saving groups?			0	no
				NA	NA
				DK	DK
df4_debts	Did you our anybody in this household lend any money to someone that has not been not repaid yet?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
df4_debts_who	If yes, to whom?		select_multiple credit_source	1	1. Bank/financial institution
				2	2. Informal schemes (money lender)
				3	3. Relative
				4	4. NGO
				5	5. Local or national government
				6	6. Customary credit system
				7	7. Village fund or neighbourhood savings group
				8	8. Cooperative
				9	9. Employer
				10	10. Landlord
				11	11. Friend/neighbour
				12	12. Shopkeeper/trader
				96	96. Other, specify
				NA	NA
				DK	DK
df4_debts_other	If other, specify		text		
df4_debts_much	And how much money did your household lend in total which has not been repaid yet? In RWF		integer		
df4_debts_interest	How much does your household gain (interest payments or other) from this per year? In RWF.		integer		
df5_sendremi	Does someone in this household SEND some remittances?	I.e. to non-household members	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
df5b_sendremiwho	If yes to whom?		select_multiple remittance_transfer	1	1. Family (son of respondent or of his/her spouse)
				2	2. Family (daughter of respondent or of his/her spouse)
				3	3. Family (father of respondent or of his/her spouse)
				4	4. Family (mother of respondent or of his/her spouse)

Name	Label	Type	Value	Value label
			5	5. Friends
			6	6. Cousins/other family
			7	7. Neighbours
			8	8. Domestic helper
			96	96. Other, specify
df5c_sendremiwho	If other, specify	text		
df5b_sendremimonth	How much remittance money did your household send in total last year? In RWF	integer		
df7_healthin	Do members of your household have health insurance?	select_one insur	1	1. Yes, all the household members are insured
			2	2. Yes, but not everybody in the household is insured
			3	3. Yes, but only I am insured
			4	4. No, no household member is insured
			96	96. Other, specify
			NA	NA
			DK	DK
df7_healthin_other	If other, specify	text		
		end group		
consent_given		end group		
enum		begin group		
Comments	We are at the end of the interview part 1. Do you have any additional comments?	text		
outcome	Outcome of interview	select_one outcome	1	1. Completed
			2	2. Incomplete
			4	4. Refused
end_time	Time of ending the interview	time		End time is automatically recorded
GPS	GPS	geopoint		
		end group		

Survey Questionnaire Rwanda – Part 2

Variable Name	Variable Label (survey question)	Variable Note (hint)	Type and Value Label Name	Code	Value Label
group0_enu	group0_enu		begin group		
a13_codeenumerator	Name of the enumerator		select_one enumerator	1	Anonymised
				2	Anonymised
				3	Anonymised
				4	Anonymised
				5	Anonymised
				6	Anonymised
				7	Anonymised
				8	Anonymised
				9	Anonymised
a14_genderenumerator	Gender of the enumerator		select_one gender	1	Male
				2	Female
village	Define Village		select_one village	1	Anonymised
				2	Anonymised
				3	Anonymised
				4	Anonymised
				5	Anonymised
				6	Anonymised
				7	Anonymised
				8	Anonymised
code_id	Household ID number		text		
avail	Is the respondent available for the survey?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK

name	label	hint	type	value	value label
introduction	Introduce yourself to the respondent. Rephrase the following in your own words: I am working for the FATE research project which is led by the International Center for Tropical Agriculture and funded by the Swiss National Science Foundation and the Swiss Agency for Development and Cooperation. The purpose of this survey is to learn more about agricultural production and especially about market-oriented agricultural production and its effect on your work and your everyday life. Individual reports are kept confidential. Your household has been randomly selected for this survey.		note		
consent	Do we have your permission to interview you and use the data for research?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
			end group		
consent_given			begin group		
group2_hh	Household identification		begin group		
a12_starttime	Start time of interview	Start time is automatically recorded	time		
a13_datesecondvisit	Today's date	Date is automatically recorded	date		
group2_hh			end group		
group3_prim	Information about the respondent		begin group		
a3_primary	What is the name of the respondent?		text		
a3b_gender	Gender of the respondent		select_one gender	1	Male
				2	Female
a3b_age	Age of respondent		integer		
a3c_relationship	Relationship to the head of household		select_one hhrelationship	1	1. Household head
				2	2. Spouse
				3	3. Child
				4	4. Son-in-law or daughter-in-law
				5	5. Grandchild
				6	6. Mother/father of male HH head
				7	7. Mother/father of female HH head

Variable	Question/Label	Type	Hint	Code	Response option
				8	8. Nephew/niece of male HH head
				9	9. Nephew/niece of female HH head
				10	10. Brother/sister of male HH head
				11	11. Brothers/sisters of female HH head
				12	12. Other relatives
				13	13. Domestic worker/helper/maid
				96	96. Other, specify
				NA	NA
				DK	DK
a4_hhtype	What is the type of household?	select_one code_hhtype		1	1. male and female headed
				2	2. female headed only
				3	3. male headed only
				4	4. male child headed
				5	5. female child headed
group3_prim		end group			
note_1decisions	Module I: Decision making within the household	note			
agri_activity	Do you have agriculture activity?	select_one yes_no		1	yes
				0	no
				NA	NA
				DK	DK
i01_crop1	What are the three most important crops cultivated by your household?	select_multiple crop	Can be for subsistence or for sale.	1	Arabica coffee
				2	Robusta coffee
				3	Excelsa coffee
				4	Typica coffee
				5	Bourbon coffee
				6	Maize
				7	Irish Potatoes
				8	Sweet potatoes
				9	Wheat
				10	Rice
				11	Pyretrum
				12	Cassava
				13	Cabbages/tomato/other vegetables
				14	Beans
				15	Peas
				16	Soya beans
				17	Sorghum

Name	Question	Hint	Type	Value	Label
			Fruits	18	
				19	Wine banana
				20	Plantain
				21	Cooking banana
				22	Tea
				23	Fruit banana
				93	93. Other 1, specify
				94	94. Other 2, specify
				95	95. Other 3, specify
				NA	NA
				DK	DK
i01_crop1_specify	If other, specify		text		
couple			begin group		
moduleI_decisions			begin group		
i02_Inputland	Did you have input on decisions about land acquisition?	E.g. purchase and size	select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions
				4	Input into most decisions
				5	Input into all decisions
				NA	NA
				DK	DK
i03_inputplot	For coffee, did you have input on decisions about which plot to plant?		select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions
				4	Input into most decisions
				5	Input into all decisions
				NA	NA
				DK	DK
i04_tecno	For coffee, did you have input on decisions about use of technologies?	E.g. technology to clear land (manual or by machines) and seeding	select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions
				4	Input into most decisions
				5	Input into all decisions
				NA	NA
				DK	DK
i04_tecno	For coffee, did you have input on decisions about use of technologies?	E.g. technology to clear land (manual or by machines) and seeding	select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions

Variable	Question	Hint	Type	Code	Label
i05_fert	For coffee, did you have input on decisions about whether to apply fertilizer?	E.g. how much and when	select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions
				4	Input into most decisions
				5	Input into all decisions
				NA	NA
				DK	DK
i06_labor	For coffee, did you have input on decisions about labor?	E.g. how many people and when	select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions
				4	Input into most decisions
				5	Input into all decisions
				NA	NA
				DK	DK
i07_harvest	For coffee, did you have input on decisions about harvesting?	E.g. when	select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions
				4	Input into most decisions
				5	Input into all decisions
				NA	NA
				DK	DK
i08_selling	For coffee, did you have input on decisions about selling product?	E.g. where, to whom and quantity	select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions
				4	Input into most decisions
				5	Input into all decisions
				NA	NA
				DK	DK
i08_seed	For coffee, did you have input on decisions about which seeds to plant?	E.g. what type of coffee	select_one decision	1	No input
				2	Very limited input
				3	Input into some decisions
				4	Input into most decisions
				5	Input into all decisions
				NA	NA

Name	Label	Type	Value	Value Label
i08_income	Did you have input on decisions about income generated from coffee?	select_one decision	1	No input
			2	Very limited input
			3	Input into some decisions
			4	Input into most decisions
			5	Input into all decisions
			NA	NA
			DK	DK
		end group		
moduleI_decisions				
credit		begin group		
credit	Credit			
loan	Did your household take any loan or credit in the past 12 months?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
loan_decision	Who made the decision to borrow?	select_one loan_decider	1	Household head
			2	Spouse
			3	Household head and spouse jointly
			4	Other household member
			5	Household jointly
			6	Household head and other household member
			7	Spouse and other household member
			8	Household head and other outside people
			9	Spouse and other outside people
			10	Household head, spouse and other outside people
			11	Someone (or group of people) outside the household
loan_decision_use	Who makes the decision about what to do with the money/item borrowed?	select_one loan_decider	1	Household head
			2	Spouse
			3	Household head and spouse jointly
			4	Other household member
			5	Household jointly
			6	Household head and other household member
			7	Spouse and other household member
			8	Household head and other outside people
			9	Spouse and other outside people
			10	Household head, spouse and other outside people

Variable	Question	Type	Code	Response
	Someone (or group of people) outside the household		11	
loan_use	What was the financial loan used for?	select_multiple use	1	Farm inputs/equipment
			2	Livestock purchase
			3	Business
			4	School fees
			5	Household items
			6	Purchase land/built house
			96	96. Other, specify
loan_use_other	If other, specify	text		
loan_repayment	What is the source of income for repaying the loan?	select_multiple income_source	1	Loan
			2	Savings
			3	Informal lender
			4	Friends or family
			5	Savings/credit group
			96	96. Other, specify
loan_repayment_other	If other, specify	text		
		end group		
groupl_otherdim	Module J: Other dimensions of gender & empowerment	begin group		
i11_finance1	Do you and your husband/wife keep what you earn together? Or do you keep them only for yourself?	select_one finance1	1	1. We put everything together
			2	2. I keep the money that I earn
			3	3. I give my money to the spouse, she/he keeps it
			NA	NA
			DK	DK
i12_finance2	Do you alone have any money you can decide what to spend on?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
i13_education	Did you have any input on decisions on the education of your children (if any)?	select_one decision	1	No input
			2	Very limited input
			3	Input into some decisions
			4	Input into most decisions
			5	Input into all decisions
			NA	NA
			DK	DK
m_lending	Did you have input on decision on lending from a bank or money lenders (if any)?	select_one decision	1	No input
			2	Very limited input
			3	Input into some decisions

Variable	Question	Type	Code	Label
			4	Input into most decisions
			5	Input into all decisions
			NA	NA
			DK	DK
i09_decision	Could you decide whether you could work outside the house?	select_one decision	1	No input
			2	Very limited input
			3	Input into some decisions
			4	Input into most decisions
			5	Input into all decisions
			NA	NA
			DK	DK
i10_laborfamily	Did you have input on decisions about labor of family members?	select_one decision	1	No input
			2	Very limited input
			3	Input into some decisions
			4	Input into most decisions
			5	Input into all decisions
			NA	NA
			DK	DK
		end group		
empowerment	Part K: Other dimensions of gender & empowerment	begin group		
i1_houseownership	Who is the owner of the house where you live in...	select_one ownership	1	Man head of the household / husband
			2	Woman head of the household / spouse
			3	Husband and spouse together
			4	Someone else in the household
			5	Husband and spouse, with somebody else
			6	Somebody else not in this household
			96	Other (specify)
			NA	NA
			DK	DK
i1_houseownershipa	If other, specify	text		
i2_hhgoods	For the consumer goods of your household, would you consider that most of them are property of...	select_one ownership	1	Man head of the household / husband
			2	Woman head of the household / spouse
			3	Husband and spouse together
			4	Someone else in the household
			5	Husband and spouse, with somebody else
			6	Somebody else not in this household
			96	Other (specify)

Variable	Question	Hint	Type	Code	Label
				NA	NA
				DK	DK
i2a_hhgoods	If other, specify		text		
i3_productiveassets	For the productive assets (agricultural tools and input) that you own, would you consider that most of them are property of...		select_one ownership	1	Man head of the household / husband
				2	Woman head of the household / spouse
				3	Husband and spouse together
				4	Someone else in the household
				5	Husband and spouse, with somebody else
				6	Somebody else not in this household
				96	Other (specify)
				NA	NA
				DK	DK
i3a_productiveassets	If other, specify		text		
i4_livestock	For the livestock that you own, would you consider that most of it is a property of...		select_one ownership	1	Man head of the household / husband
				2	Woman head of the household / spouse
				3	Husband and spouse together
				4	Someone else in the household
				5	Husband and spouse, with somebody else
				6	Somebody else not in this household
				96	Other (specify)
				NA	NA
				DK	DK
i4a_livestock	If other, specify		text		
i6_whobuys_agr	If your household would need to buy new productive assets (agricultural tools or inputs), who would take this decision?		select_one ownership	1	Man head of the household / husband
				2	Woman head of the household / spouse
				3	Husband and spouse together
				4	Someone else in the household
				5	Husband and spouse, with somebody else
				6	Somebody else not in this household
				96	Other (specify)
				NA	NA
				DK	DK
i6a_whobuys_agr	If other, specify		text		
i8_whobuysmajor	Who usually makes decisions about making major household purchases?	E.g. buying a fridge or a vehicle	select_one ownership	1	Man head of the household / husband
				2	Woman head of the household / spouse
				3	Husband and spouse together
				4	Someone else in the household
				5	Husband and spouse, with somebody else

Variable	Question	Note	Type	Code	Label
				6	Somebody else not in this household
				96	Other (specify)
				NA	NA
				DK	DK
i8a_whobuysmajor	If other, specify		text		
i9_whobuyspurchases	Who usually makes decisions about making purchases for daily household needs?	Daily pruchases and small assets	select_one ownership	1	Man head of the household / husband
				2	Woman head of the household / spouse
				3	Husband and spouse together
				4	Someone else in the household
				5	Husband and spouse, with somebody else
				6	Somebody else not in this household
				96	Other (specify)
				NA	NA
				DK	DK
i9a_whobuyspurchases	If other, specify		text		
empowerment			end group		
couple			end group		
groupk_orga_socialcapital	Module L: Participation/leadership/voice		begin group		
k1_groups	Do you belong to any association (such as a producer group, cooperative, union)?	Please ask about any form of association (formal or informal)	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
k1_groups_number	Please indicate all the groups you are a member of		select_multiple code_grouptype	1	1. Cooperative
				2	2. Party group
				3	3. Producer group
				4	4. Community forestry user group
				5	5. Women Union
				6	6. Students' Parent association
				7	7. Women's saving group
				8	8. Water association
				9	9. Religious group
				10	10. Labour or trade union
				93	93. Other 1, specify
				94	94. Other 2, specify
				NA	NA
k1_groups_number_other1	If other, specify		text		
k1_groups_number_other2	If other, specify		text		

Variable	Question	Note	Type	Code	Label
k2_mostimpgroup	Of all of these groups, which one is the most important to you?		select_one code_grouptype	1	1. Cooperative
				2	2. Party group
				3	3. Producer group
				4	4. Community forestry user group
				5	5. Women Union
				6	6. Students' Parent association
				7	7. Women's saving group
				8	8. Water association
				9	9. Religious group
				10	10. Labour or trade union
				93	93. Other 1, specify
				94	94. Other 2, specify
				NA	NA
k2_mostimpgroup_other1	If other, specify		text		
k2_mostimpgroup_other2	If other, specify		text		
k2b_grouptype	What is the group's name?		text		
k6_participation	Do you often participate actively in discussions in this group?		select_one often14	1	1. No, almost never
				2	2. No, only occasionally
				3	3. Yes, quite often
				4	4. Yes, very often
k18_associate	Are workers allowed to form associations at your workplace?	This question does not apply if the person is neither hiring in nor hiring out labour	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
			end group		
nutrition	Module M: Nutrition. Complete this with regard to food consumed during the last normal day. If yesterday was a weekend or special celebration, use the last normal day as a reference.		note		
nutrition_Ma	nutrition		begin group		
Ma2	Was yesterday a weekend or special celebration?		select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
Ma22	**If yes, use the last day before which was not a weekend or special celebration!**		note		

Code	Question	Note	Type	Value	Label
Ma3	Did you have anything to eat or drink when you woke?	Smoking does not count	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
Ma4	If yes, what?		select_multiple food	1	Foods made from grains:Porridge, bread, rice, pasta/noodles or other foods made from grains
				2	White roots and tubers and plantains: White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains
				3	Pulses (beans, peas and lentils): Mature beans or peas (fresh or dried seed), lentils or bean/pea products, including hummus, tofu and tempeh
				4	Nuts and seeds:Any tree nut, groundnut/peanut or certain seeds, or nut/seed "butters" or pastes
				5	Milk and milk products:Milk, cheese, yoghurt or other milk products but NOT including butter, ice cream, cream or sour cream
				6	Organ meat:Liver, kidney, heart or other organ meats or blood-based foods, including from wild game
				7	Meat and poultry:Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck or other bird, frog
				8	Fish and seafood:Fresh or dried fish, shellfish or seafood
				9	Eggs from poultry or any other bird
				10	Dark green leafy vegetables: List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves
				11	Vitamin A-rich vegetables, roots and tubers: Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside
				12	Vitamin A-rich fruits Ripe mango, ripe papaya
				13	Other vegetables (including bamboo)
				14	Other fruits
				15	Condiments and seasonings: Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds
				16	Other beverages and foods Tea or coffee if not sweetened, clear broth, alcohol

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Code	Number	Type	Question/Description
	17		Insects and other small protein foods: Insects, insect larvae/grubs, insect eggs and land and sea snails
	18		Red palm oil
	19		Other oils and fats: Oil: fats or butter added to food or used for cooking, including extracted oils from nuts, fruits and seeds; and all animal fat
	20		Savoury and fried snacks: Crisps and chips, fried dough or other fried snacks
	21		Sweets: Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, sweet pastries or ice cream
	22		Sugar-sweetened beverages: Sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks, malt drinks, yoghurt drinks or sweet tea or coffee with sugar
Ma5	1	select_one yes_no	yes — Did you have anything to eat or drink later in the morning? (Smoking does not count)
	0		no
	NA		NA
	DK		DK
Ma6	1	select_multiple food	Foods made from grains:Porridge, bread, rice, pasta/noodles or other foods made from grains — If yes, what?
	2		White roots and tubers and plantains: White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains
	3		Pulses (beans, peas and lentils): Mature beans or peas (fresh or dried seed), lentils or bean/pea products, including hummus, tofu and tempeh
	4		Nuts and seeds:Any tree nut, groundnut/peanut or certain seeds, or nut/seed "butters" or pastes
	5		Milk and milk products:Milk, cheese, yoghurt or other milk products but NOT including butter, ice cream, cream or sour cream
	6		Organ meat:Liver, kidney, heart or other organ meats or blood-based foods, including from wild game
	7		Meat and poultry:Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck or other bird, frog
	8		Fish and seafood:Fresh or dried fish, shellfish or seafood
	9		Eggs from poultry or any other bird

Code	Description	Question	Note	Type	Q
10	Dark green leafy vegetables: List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves				
11	Vitamin A-rich vegetables, roots and tubers: Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside				
12	Vitamin A-rich fruits Ripe mango, ripe papaya				
13	Other vegetables (including bamboo)				
14	Other fruits				
15	Condiments and seasonings: Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds				
16	Other beverages and foods Tea or coffee if not sweetened, clear broth, alcohol				
17	Insects and other small protein foods: Insects, insect larvae/grubs, insect eggs and land and sea snails				
18	Red palm oil				
19	Other oils and fats: Oil; fats or butter added to food or used for cooking, including extracted oils from nuts, fruits and seeds; and all animal fat				
20	Savoury and fried snacks: Crisps and chips, fried dough or other fried snacks				
21	Sweets: Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, sweet pastries or ice cream				
22	Sugar-sweetened beverages: Sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks, malt drinks, yoghurt drinks or sweet tea or coffee with sugar				
1	yes	Did you eat or drink anything at mid-day?	Smoking does not count	select_one yes_no	Ma7
0	no				
NA	NA				
DK	DK				
1	Foods made from grains:Porridge, bread, rice, pasta/noodles or other foods made from grains	If yes, what?		select_multiple food	Ma8
2	White roots and tubers and plantains: White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains				

3	Pulses (beans, peas and lentils): Mature beans or peas (fresh or dried seed), lentils or bean/pea products, including hummus, tofu and tempeh
4	Nuts and seeds:Any tree nut, groundnut/peanut or certain seeds, or nut/seed "butters" or pastes
5	Milk and milk products:Milk, cheese, yoghurt or other milk products but NOT including butter, ice cream, cream or sour cream
6	Organ meat:Liver, kidney, heart or other organ meats or blood-based foods, including from wild game
7	Meat and poultry:Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck or other bird, frog
8	Fish and seafood:Fresh or dried fish, shellfish or seafood
9	Eggs from poultry or any other bird
10	Dark green leafy vegetables: List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves
11	Vitamin A-rich vegetables, roots and tubers: Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside
12	Vitamin A-rich fruits Ripe mango, ripe papaya
13	Other vegetables (including bamboo)
14	Other fruits
15	Condiments and seasonings: Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds
16	Other beverages and foods Tea or coffee if not sweetened, clear broth, alcohol
17	Insects and other small protein foods: Insects, insect larvae/grubs, insect eggs and land and sea snails
18	Red palm oil
19	Other oils and fats: Oil: fats or butter added to food or used for cooking, including extracted oils from nuts, fruits and seeds; and all animal fat
20	Savoury and fried snacks: Crisps and chips, fried dough or other fried snacks

Code	Question	Note	Type	No.	Description
				21	Sweets: Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, sweet pastries or ice cream
				22	Sugar-sweetened beverages: Sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks, malt drinks, yoghurt drinks or sweet tea or coffee with sugar
Ma9	Did you have anything to eat or drink during the afternoon?	Smoking does not count	select_one yes_no	1	yes
				0	no
				NA	NA
				DK	DK
Ma10	If yes, what?		select_multiple food	1	Foods made from grains:Porridge, bread, rice, pasta/noodles or other foods made from grains
				2	White roots and tubers and plantains: White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains
				3	Pulses (beans, peas and lentils): Mature beans or peas (fresh or dried seed), lentils or bean/pea products, including hummus, tofu and tempeh
				4	Nuts and seeds:Any tree nut, groundnut/peanut or certain seeds, or nut/seed "butters" or pastes
				5	Milk and milk products:Milk, cheese, yoghurt or other milk products but NOT including butter, ice cream, cream or sour cream
				6	Organ meat:Liver, kidney, heart or other organ meats or blood-based foods, including from wild game
				7	Meat and poultry:Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck or other bird, frog
				8	Fish and seafood:Fresh or dried fish, shellfish or seafood
				9	Eggs from poultry or any other bird
				10	Dark green leafy vegetables: List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves
				11	Vitamin A-rich vegetables, roots and tubers: Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside
				12	Vitamin A-rich fruits Ripe mango, ripe papaya
				13	Other vegetables (including bamboo)
				14	Other fruits

Question	Code	Description	Type	Note
	15	Condiments and seasonings: Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds		
	16	Other beverages and foods Tea or coffee if not sweetened, clear broth, alcohol		
	17	Insects and other small protein foods: Insects, insect larvae/grubs, insect eggs and land and sea snails		
	18	Red palm oil		
	19	Other oils and fats: Oil; fats or butter added to food or used for cooking, including extracted oils from nuts, fruits and seeds; and all animal fat		
	20	Savoury and fried snacks: Crisps and chips, fried dough or other fried snacks		
	21	Sweets: Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, sweet pastries or ice cream		
	22	Sugar-sweetened beverages:Sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks, malt drinks, yoghurt drinks or sweet tea or coffee with sugar		
Ma11	1	yes	select_one yes_no	Smoking does not count
	0	no		
	NA	NA		
	DK	DK		
Ma12	1	Foods made from grains:Porridge, bread, rice, pasta/noodles or other foods made from grains	select_multiple food	
	2	White roots and tubers and plantains: White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains		
	3	Pulses (beans, peas and lentils): Mature beans or peas (fresh or dried seed), lentils or bean/pea products, including hummus, tofu and tempeh		
	4	Nuts and seeds:Any tree nut, groundnut/peanut or certain seeds, or nut/seed "butters" or pastes		
	5	Milk and milk products:Milk, cheese, yoghurt or other milk products but NOT including butter, ice cream, cream or sour cream		

#	Description
6	Organ meat:Liver, kidney, heart or other organ meats or blood-based foods, including from wild game
7	Meat and poultry:Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck or other bird, frog
8	Fish and seafood:Fresh or dried fish, shellfish or seafood
9	Eggs from poultry or any other bird
10	Dark green leafy vegetables: List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves
11	Vitamin A-rich vegetables, roots and tubers: Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside
12	Vitamin A-rich fruits Ripe mango, ripe papaya
13	Other vegetables (including bamboo)
14	Other fruits
15	Condiments and seasonings: Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds
16	Other beverages and foods Tea or coffee if not sweetened, clear broth, alcohol
17	Insects and other small protein foods: Insects, insect larvae/grubs, insect eggs and land and sea snails
18	Red palm oil
19	Other oils and fats: Oil: fats or butter added to food or used for cooking, including extracted oils from nuts, fruits and seeds; and all animal fat
20	Savoury and fried snacks: Crisps and chips, fried dough or other fried snacks
21	Sweets: Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, sweet pastries or ice cream
22	Sugar-sweetened beverages:Sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks, malt drinks, yoghurt drinks or sweet tea or coffee with sugar

		select_one yes_no
1	yes	
0	no	

| MaI3 | Smoking does not count | |

		NA DK
Ma14		NA DK
Did you have anything else to eat or drink in the evening before going to bed or during the night?	select_multiple food	1 — Foods made from grains:Porridge, bread, rice, pasta/noodles or other foods made from grains
If yes, what?		2 — White roots and tubers and plantains: White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains
		3 — Pulses (beans, peas and lentils): Mature beans or peas (fresh or dried seed), lentils or bean/pea products, including hummus, tofu and tempeh
		4 — Nuts and seeds:Any tree nut, groundnut/peanut or certain seeds, or nut/seed "butters" or pastes
		5 — Milk and milk products:Milk, cheese, yoghurt or other milk products but NOT including butter, ice cream, cream or sour cream
		6 — Organ meat:Liver, kidney, heart or other organ meats or blood-based foods, including from wild game
		7 — Meat and poultry:Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck or other bird, frog
		8 — Fish and seafood:Fresh or dried fish, shellfish or seafood
		9 — Eggs from poultry or any other bird
		10 — Dark green leafy vegetables: List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves
		11 — Vitamin A-rich vegetables, roots and tubers: Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside
		12 — Vitamin A-rich fruits Ripe mango, ripe papaya
		13 — Other vegetables (including bamboo)
		14 — Other fruits
		15 — Condiments and seasonings: Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds
		16 — Other beverages and foods Tea or coffee if not sweetened, clear broth, alcohol

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name	type	label	code	choice
			17	Insects and other small protein foods: Insects, insect larvae/grubs, insect eggs and land and sea snails
			18	Red palm oil
			19	Other oils and fats: Oil; fats or butter added to food or used for cooking, including extracted oils from nuts, fruits and seeds; and all animal fat
			20	Savoury and fried snacks: Crisps and chips, fried dough or other fried snacks
			21	Sweets: Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, sweet pastries or ice cream
			22	Sugar-sweetened beverages: Sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks, malt drinks, yoghurt drinks or sweet tea or coffee with sugar
nutrition_Ma	end group			
food_security	note	Module N: Food Security: Consumption, Resilience and Shocks		
groupe_foodsecu	begin group	Module N: Food Security: Consumption, Resilience and Shocks		
e1_foodsecu	select_one yes_no	In the last year (12 last months), did you worry that your household would not have enough food?	1	yes
			0	no
			NA	NA
			DK	DK
e1b_foodsecu	select_one frequencefs	If yes, how many times did this happen?	1	Rarely (during 1 month in the last 12 months)
			2	Sometimes (during 2 to 4 months in the last 12 months)
			3	Often (more than during 5 months in the last 12 months)
			DK	DK
			NA	NA
e2_foodsecu	select_one yes_no	In the last year (12 last months) did it happen that you or any member of your household didn't manage to buy the type of food you wanted to eat?	1	yes
			0	no
			NA	NA
			DK	DK
e2b_foodsecu	select_one frequencefs	If yes, how many times did this happen?	1	Rarely (during 1 month in the last 12 months)
			2	Sometimes (during 2 to 4 months in the last 12 months)
			3	Often (more than during 5 months in the last 12 months)

Variable	Question	Type	Code	Label
			DK	DK
			NA	NA
e3_foodsecu	In the last year (12 last months) did it happen that you or any member of your household didn't manage to buy the quantity of food required for your Household?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
e3b_foodsecu	If yes, how many times did this happen?	select_one frequencefs	1	Rarely (during 1 month in the last 12 months)
			2	Sometimes (during 2 to 4 months in the last 12 months)
			3	Often (more than during 5 months in the last 12 months)
			DK	DK
			NA	NA
e4_foodsecu	If the answer is yes to any of the question above: please name the reason(s)	select_multiple reasons	1	1. Decline in own farm production because of drought
			2	2. Decline in own farm production because of pests and diseases
			3	3. Decline in own farm production because of labour constraints
			4	4. Decline in own farm production because of time constraints
			5	5. Decline in own farm production because of soil degradation
			6	6. Decline in own farm production because of low quality of agricultural inputs used
			7	7. Lack of funds to purchase food
			8	8. Decline in government food supplies
			9	9. Decline in food supplies from friends and relatives
			10	10. Decline in remittances received from relatives and friends
			11	11. Increase of food prices
			12	12. Unemployment of household member(s)
			13	13. Increase of household expenditures due to Illness/death of household member(s)
			14	14. Less earnings due to decline of crop prices
			15	15. Too much rain
			16	16. Sold the whole production out/nothing left for food
			96	96. Other, specify
e4b_foodsecu	If other, specify	text		

name	label	type	code	value
		end group		
time_use		begin group		
time_allocation	Module P: Time use Enumerator: Please record a log of the activities for the individual in the complete 24 hours (starting in the morning at 4 am, finishing at 3:59 am of the next day) of the **last normal day** (**this means that if yesterday was a weekend or special celebration, you have to take the day before that**). The time intervals are marked in 30 min. intervals and multiple activities can be marked for each time period. "Now I'd like to ask you about how you spent your time during the past 24 hours of your last normal day. We'll begin from the morning and continue through to the next morning. This will be a detailed accounting. I'm interested in everything you do (i.e. resting, eating, personal care, work inside and outside the home, caring for children, cooking, shopping, socializing, etc.), even if it doesn't take you much time."	note		
T1	Was yesterday a weekend or special celebration?	select_one yes_no	1	yes
			0	no
			NA	NA
			DK	DK
T2	**If yes, use the last day before which was not a weekend or special celebration!**	note		
tu1	Indicate activities of this hh member (04:00 to 06:30)	begin group		
m1_a	Sleeping or resting	select_multiple time_m1	time_m1 (same for all)	
m1_b	Eating	select_multiple time_m1	400	4
m1_c	Personal care	select_multiple time_m1	430	4b
m1_d	School (also homework)	select_multiple time_m1	500	5
m1_e	Work as employed	select_multiple time_m1	530	5b

Name	Activity	Type		
m1_f	Own business work	select_multiple time_m1	600	6
m1_g	Own-account farming/livestock	select_multiple time_m1	630	6b
m1_j	Shopping/getting service (incl health services)	select_multiple time_m1		
m1_k	Weaving, sewing, textile care	select_multiple time_m1		
m1_l	Cooking	select_multiple time_m1		
m1_m	Domestic work (incl fetching wood and water)	select_multiple time_m1		
m1_n	Care for children/adults/elderly	select_multiple time_m1		
m1_o	Travelling and commuting	select_multiple time_m1		
m1_p	Watching TV/listening to radio/reading	select_multiple time_m1		
m1_q	Exercising	select_multiple time_m1		
m1_r	Social activities and hobbies	select_multiple time_m1		
m1_s	Religious activities	select_multiple time_m1		
m1_t	Other	select_multiple time_m1		
		end group		
tu2	Indicate activities of this hh member (07:00 to 9:30)	begin group		
m2_a	Sleeping or resting	select_multiple time_m2	time_m2 (same for all)	
m2_b	Eating	select_multiple time_m2	700	7
m2_c	Personal care	select_multiple time_m2	730	7b
m2_d	School (also homework)	select_multiple time_m2	800	8
m2_e	Work as employed	select_multiple time_m2	830	8b
m2_f	Own business work	select_multiple time_m2	900	9
m2_g	Own-account farming/livestock	select_multiple time_m2	930	9b
m2_j	Shopping/getting service (incl health services)	select_multiple time_m2		
m2_k	Weaving, sewing, textile care	select_multiple time_m2		
m2_l	Cooking	select_multiple time_m2		
m2_m	Domestic work (incl fetching wood and water)	select_multiple time_m2		
m2_n	Care for children/adults/elderly	select_multiple time_m2		
m2_o	Travelling and commuting	select_multiple time_m2		
m2_p	Watching TV/listening to radio/reading	select_multiple time_m2		
m2_q	Exercising	select_multiple time_m2		
m2_r	Social activities and hobbies	select_multiple time_m2		
m2_s	Religious activities	select_multiple time_m2		
m2_t	Other	select_multiple time_m2		
		end group		

	Description	Type	time_m3 (same for all)	
tu3	Indicate activities of this hh member(10:00 to 12:30)	begin group		
m3_a	Sleeping or resting	select_multiple time_m3	1000	10
m3_b	Eating	select_multiple time_m3	1030	10b
m3_c	Personal care	select_multiple time_m3	1100	11
m3_d	School (also homework)	select_multiple time_m3	1130	11b
m3_e	Work as employed	select_multiple time_m3	1200	12
m3_f	Own business work	select_multiple time_m3	1230	12b
m3_g	Own-account farming/livestock	select_multiple time_m3		
m3_j	Shopping/getting service (incl health services)	select_multiple time_m3		
m3_k	Weaving, sewing, textile care	select_multiple time_m3		
m3_l	Cooking	select_multiple time_m3		
m3_m	Domestic work (incl fetching wood and water)	select_multiple time_m3		
m3_n	Care for children/adults/elderly	select_multiple time_m3		
m3_o	Travelling and commuting	select_multiple time_m3		
m3_p	Watching TV/listening to radio/reading	select_multiple time_m3		
m3_q	Exercising	select_multiple time_m3		
m3_r	Social activities and hobbies	select_multiple time_m3		
m3_s	Religious activities	select_multiple time_m3		
m3_t	Other	select_multiple time_m3		
		end group		
			time_m4 (same for all)	
tu4	Indicate activities of this hh member(13:00 to 15:30)	begin group		
m4_a	Sleeping or resting	select_multiple time_m4	1300	13
m4_b	Eating	select_multiple time_m4	1330	13b
m4_c	Personal care	select_multiple time_m4	1400	14
m4_d	School (also homework)	select_multiple time_m4	1430	14b
m4_e	Work as employed	select_multiple time_m4	1500	15
m4_f	Own business work	select_multiple time_m4	1530	15b
m4_g	Own-account farming/livestock	select_multiple time_m4		
m4_j	Shopping/getting service (incl health services)	select_multiple time_m4		
m4_k	Weaving, sewing, textile care	select_multiple time_m4		
m4_l	Cooking	select_multiple time_m4		
m4_m	Domestic work (incl fetching wood and water)	select_multiple time_m4		

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Code	Description	Type	Value	Number
m4_n	Care for children/adults/elderly	select_multiple time_m4		
m4_o	Travelling and commuting	select_multiple time_m4		
m4_p	Watching TV/listening to radio/reading	select_multiple time_m4		
m4_q	Exercising	select_multiple time_m4		
m4_r	Social activities and hobbies	select_multiple time_m4		
m4_s	Religious activities	select_multiple time_m4		
m4_t	Other	select_multiple time_m4		
		end group		
tu5	Indicate activities of this hh member (16:00 to 18:30)	begin group		
			time_m5 (same for all)	
m5_a	Sleeping or resting	select_multiple time_m5	1600	16
m5_b	Eating	select_multiple time_m5	1630	16b
m5_c	Personal care	select_multiple time_m5	1700	17
m5_d	School (also homework)	select_multiple time_m5	1730	17b
m5_e	Work as employed	select_multiple time_m5	1800	18
m5_f	Own business work	select_multiple time_m5	1830	18b
m5_g	Own-account farming/livestock	select_multiple time_m5		
m5_j	Shopping/getting service (incl health services)	select_multiple time_m5		
m5_k	Weaving, sewing, textile care	select_multiple time_m5		
m5_l	Cooking	select_multiple time_m5		
m5_m	Domestic work (incl fetching wood and water)	select_multiple time_m5		
m5_n	Care for children/adults/elderly	select_multiple time_m5		
m5_o	Travelling and commuting	select_multiple time_m5		
m5_p	Watching TV/listening to radio/reading	select_multiple time_m5		
m5_q	Exercising	select_multiple time_m5		
m5_r	Social activities and hobbies	select_multiple time_m5		
m5_s	Religious activities	select_multiple time_m5		
m5_t	Other	select_multiple time_m5		
		end group		
tu6	Indicate activities of this hh member(19:00 to 21:30)	begin group		
			time_m6 (same for all)	
m6_a	Sleeping or resting	select_multiple time_m6	1900	19
m6_b	Eating	select_multiple time_m6	1930	19b
m6_c	Personal care	select_multiple time_m6	2000	20
m6_d	School (also homework)	select_multiple time_m6		

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m6_e	Work as employed		select_multiple time_m6	2030	20b
m6_f	Own business work		select_multiple time_m6	2100	21
m6_g	Own-account farming/livestock		select_multiple time_m6	2130	21b
m6_j	Shopping/getting service (incl health services)		select_multiple time_m6		
m6_k	Weaving, sewing, textile care		select_multiple time_m6		
m6_l	Cooking		select_multiple time_m6		
m6_m	Domestic work (incl fetching wood and water)		select_multiple time_m6		
m6_n	Care for children/adults/elderly		select_multiple time_m6		
m6_o	Travelling and commuting		select_multiple time_m6		
m6_p	Watching TV/listening to radio/reading		select_multiple time_m6		
m6_q	Exercising		select_multiple time_m6		
m6_r	Social activities and hobbies		select_multiple time_m6		
m6_s	Religious activities		select_multiple time_m6		
m6_t	Other		select_multiple time_m6		
			end group		
tu7	Indicate activities of this hh member (22:00 to 00:30)		begin group		
m7_a	Sleeping or resting		select_multiple time_m7	time_m7 (same for all)	
m7_b	Eating		select_multiple time_m7		
m7_c	Personal care		select_multiple time_m7		
m7_d	School (also homework)		select_multiple time_m7		
m7_e	Work as employed		select_multiple time_m7		
m7_f	Own business work		select_multiple time_m7		
m7_g	Own-account farming/livestock		select_multiple time_m7		
m7_j	Shopping/getting service (incl health services)		select_multiple time_m7		
m7_k	Weaving, sewing, textile care		select_multiple time_m7		
m7_l	Cooking		select_multiple time_m7		
m7_m	Domestic work (incl fetching wood and water)		select_multiple time_m7		
m7_n	Care for children/adults/elderly		select_multiple time_m7		
m7_o	Travelling and commuting		select_multiple time_m7		
m7_p	Watching TV/listening to radio/reading		select_multiple time_m7		
m7_q	Exercising		select_multiple time_m7		
m7_r	Social activities and hobbies		select_multiple time_m7		
m7_s	Religious activities		select_multiple time_m7		
m7_t	Other		select_multiple time_m7		
			end group		

tu8	Indicate activities of this hh member (01:00 to 03:30)	begin group		time_m8 (same for all)
m8_a	Sleeping or resting	select_multiple time_m8	100	1
m8_b	Eating	select_multiple time_m8	130	1b
m8_c	Personal care	select_multiple time_m8	200	2
m8_d	School (also homework)	select_multiple time_m8	230	2b
m8_e	Work as employed	select_multiple time_m8	300	3
m8_f	Own business work	select_multiple time_m8	330	3b
m8_g	Own-account farming/livestock	select_multiple time_m8		
m8_j	Shopping/getting service (incl health services)	select_multiple time_m8		
m8_k	Weaving, sewing, textile care	select_multiple time_m8		
m8_l	Cooking	select_multiple time_m8		
m8_m	Domestic work (incl fetching wood and water)	select_multiple time_m8		
m8_n	Care for children/adults/elderly	select_multiple time_m8		
m8_o	Travelling and commuting	select_multiple time_m8		
m8_p	Watching TV/listening to radio/reading	select_multiple time_m8		
m8_q	Exercising	select_multiple time_m8		
m8_r	Social activities and hobbies	select_multiple time_m8		
m8_s	Religious activities	select_multiple time_m8		
m8_t	Other	select_multiple time_m8		
		end group		
P2.01	In the mentioned 24 hours did you work (at home or outside of the home) more than usual, about the same as usual, or less than usual?	select_one respond	1	More than usual
			2	About the same as usual
			3	Less than usual
time_use		end group		
excessive_hours	On how many days have you worked more than 10 hours in the last 12 months?	select_one excessive_freq	1	1. On less than 5 days
	This can be on multiple activities, e.g. own-account farming and wage labour			
			2	2. On 5 to 20 days
			3	3. On 20 to 40 days
			4	4. On more than 40 days

Module_R		note		
random		calculate		
R1		begin group		
R1	Casual worker			
R1_1	Pease visualize the following situation: Ms. Nyirahabimana is on field casual worker. Her daily salary is 700 RWF. How do you classify the wage of this person?	select_one fairness	-3	Unfair too deep
			-2	-2
			-1	-1
			0	fair
			1	1
			2	2
			3	Unfair too high
R1_2	Pease visualize the following situation: Ms. Nyirahabimana is on field casual worker. Her daily salary is 1000 RWF. How do you classify the wage of this person?	select_one fairness	-3	Unfair too deep
			-2	-2
			-1	-1
			0	fair
			1	1
			2	2
			3	Unfair too high
R1_3	Please visualize the following situation: Ms. Nyirahabimana is on field casual worker. Her monthly salary is 1200 RWF. How do you classify the wage of this person?	select_one fairness	-3	Unfair too deep
			-2	-2
			-1	-1
			0	fair
			1	1
			2	2
			3	Unfair too high
R1_4	Please visualize the following situation: Mr. Nyirahabimana is on field casual worker. His daily salary is 700 RWF. How do you classify the wage of this person?	select_one fairness	-3	Unfair too deep
			-2	-2
			-1	-1
			0	fair
			1	1
			2	2
			3	Unfair too high
R1_5	Please visualize the following situation: Mr. Nyirahabimana is on field casual worker. His daily salary is 1000 RWF. How do you classify the wage of this person?	select_one fairness	-3	Unfair too deep
			-2	-2
			-1	-1
			0	fair
			1	1

MODULE R- VIGNETTE EXPERIMENT- FAIRNESS OF WAGES AND GENDER DISCRIMINATION

name	type	label	value	choice label
			2	2
			3	Unfair too high
R1_6	select_one fairness	Please visualize the following situation: Mr. Nyirahabimana is on field casual worker. His daily salary is 1200 RWF. How do you classify the wage of this person?	-3	Unfair too deep
			-2	-2
			-1	-1
			0	fair
			1	1
			2	2
			3	Unfair too high
	end group			
housework_vignettes	begin group	Housework vignette: We now present different scenarios of a family living in a rural area near a city. What do you think the woman should do in relation to housework?		
housework_vignette1	select_one housework	Please visualize the following situation: This family lives in a rural area near a city. They have two children, 3 and 5 years old. The man has full-time work outside the household and comes home every day. The woman does almost all of the housework. What do you think the woman should do in relation to housework?	1	1. Should do a lot less housework (-3)
			2	2. Should do somewhat less housework (-2)
			3	3. Should do a little less housework
			4	4. It should stay the same
			5	5. Should do a little more housework
			6	6. Should do somewhat more housework (+2)
			7	7. Should do a lot more housework (+3)
housework_vignette2	select_one housework	Please visualize the following situation: This family lives in a rural area near a city. They have two children, 22 and 24 years old. The man has part-time work outside the household and comes home every day. The woman does almost all of the housework. What do you think the woman should do in relation to housework?	1	1. Should do a lot less housework (-3)
			2	2. Should do somewhat less housework (-2)
			3	3. Should do a little less housework
			4	4. It should stay the same
			5	5. Should do a little more housework
			6	6. Should do somewhat more housework (+2)
			7	7. Should do a lot more housework (+3)
housework_vignette3	select_one housework	Please visualize the following situation: This family lives in a rural area near a city. They have two children, 3 and 5 years old. The man has part-time work outside the household and comes home every day. The woman does almost all of the housework. What do you think the woman should do in relation to housework?	1	1. Should do a lot less housework (-3)
			2	2. Should do somewhat less housework (-2)
			3	3. Should do a little less housework
			4	4. It should stay the same
			5	5. Should do a little more housework
			6	6. Should do somewhat more housework (+2)
			7	7. Should do a lot more housework (+3)
housework_vignette4	select_one housework	Please visualize the following situation: This family lives in a rural area near a	1	1. Should do a lot less housework (-3)
			2	2. Should do somewhat less housework (-2)

name	type	label	value	value label
		city. They have two children, 22 and 24 years old. The man has full-time work outside the household and comes home every day. The woman does almost all of the housework. What do you think the woman should do in relation to housework?	3	3. Should do a little less housework
			4	4. It should stay the same
			5	5. Should do a little more housework
			6	6. Should do somewhat more housework (+2)
			7	7. Should do a lot more housework (+3)
housework_vignette5	select_one housework	Please visualize the following situation: This family lives in a rural area near a city. They have two children, 3 and 5 years old. The women and man work on the farm together. The woman does almost all of the housework. What do you think the woman should do in relation to housework?	1	1. Should do a lot less housework (-3)
			2	2. Should do somewhat less housework (-2)
			3	3. Should do a little less housework
			4	4. It should stay the same
			5	5. Should do a little more housework
			6	6. Should do somewhat more housework (+2)
			7	7. Should do a lot more housework (+3)
housework_vignette6	select_one housework	Please visualize the following situation: This family lives in a rural area near a city. They have two children, 22 and 24 years old. The women and man work on the farm together. The woman does almost all of the housework. What do you think the woman should do in relation to housework?	1	1. Should do a lot less housework (-3)
			2	2. Should do somewhat less housework (-2)
			3	3. Should do a little less housework
			4	4. It should stay the same
			5	5. Should do a little more housework
			6	6. Should do somewhat more housework (+2)
			7	7. Should do a lot more housework (+3)
	end group			
consent_given	end group			
enum	begin group			
Comments	text	We are at the end of the interview part 2. Do you have any additional comments?		
other_person_present	select_one yes_no	Was somebody present during part two of the interview that might have affected the responses (e.g. the other spouse)?	1	yes
			0	no
			NA	NA
			DK	DK
outcome	select_one outcome	Outcome of interview	1	1. Completed
			2	2. Incomplete
			4	4. Refused
end_time	time	Time of ending the interview		End time is automatically recorded
GPS	geopoint	GPS		
enum	end group			

Appendix 2:   Data Cleaning Guidelines

Also available under the following DOI:

Data Cleaning Guidelines

for 2ⁿᵈ Phase FATE-Surveys: Stata Syntax

Abridged version

Author: Patrick Illien[1]

Contents

Introduction

These guidelines have been developed for the 2ⁿᵈ phase FATE surveys to ensure a minimum standard for comparability. The present docment has been inspired by the following sources, which contain useful tips and should be consulted for more information:

- ACAPS, 2016. *Data cleaning: technical brief.* Available [here].
- Beaver, M., 2012. *Survey Data Cleaning Guidelines: (SPSS and Stata).* Available [here].
- Data Science Primer, 2018. *Chapter 3: Data Cleaning.* Available [here].
- IFPRI (International Food Policy Research Institute), 2018. *A guide to data cleaning using Stata.* Available [here].

Most of this guide is presented in tables. In each one those, the left columns describe the steps to be taken, whereas the right columns show the corresponding Stata syntax. All Stata codes were created and tested using version 15.1. The guidelines have a logical order and each step should be undertaken after the other because some syntax only works if the previous ones have already been applied successfully.

Of course, the better the survey is designed, the less errors will be made later. Investing time in survey design, coding and enumerator training at the start pays!

Unless otherwise stated, mark problematic observations, don't change values – it is up to the analysis how to deal with them!

Copying Dataset

- **The first thing to do is to make a copy of the original data file (a simple copy without opening the raw data in a programme)!** ALWAYS keep the source files in a separate folder called "RAW DATA" and change its attribute to READ-ONLY, to avoid modification of any of the files. Then encrypt the raw-data files and don't forget to back them up as well.
- Never touch the original data and only work in the copied filed from now on, even if only importing the data into a programme. Discuss with your supervisors if the original data (which are not anonymised) shall be deleted after data analysis is finished.

Documenting Changes and Getting Started

- Be sure to always document any changes you make directly in a R, Stata or SPSS when using any of these software packages. If you use any other software, document any changes in an excel sheet variable by variable.

What?	How? (STATA syntax)

• Make one change log per dataset and keep the change logs organised.
• Each change log contains all modifications to that dataset and will serve as an audit trail. It will allow a return to the original value if required. Within the change log, store the following information:
   ○ At the top of the file:
      ▪ Country and survey year (if necessary also survey type)
      ▪ Dataset
      ▪ Date of file status
      ▪ Author of file
      ▪ Purpose of file
      ▪ Comments
   ○ Throughout:
      ▪ Variable or observation concerned
      ▪ What the change was (e.g. old and new value)
      ▪ Comments/justification
	• Always document your comments and commands in do-files, the are the change log when working with Stata.
	• You can organise your do-files in Stata's project manager. Open in from within the do-file editor on Windows and Unix or from within the main menu on Mac (select File>New>Project....)
	• Create one master do-file per dataset and name it accordingly: type doedit into the command window to create a do-file where you write your commands. You can add comments after * at the start of a line. Save the do-file into the project manager.
	• Add all the relevant information at the top as described in the left column.
	• Apply the structure and cleaning process of this guide and add section titles accordingly. Take over all the relevant commands from each section in this guide. In each section, the datasets in which certain steps have to be performed (i.e. which have to be added to the do-file) are specified in colour.
	• Describe and justify each change you make to the data.
	• All the other information will be readable from the commands themselves but it is always good to add some descriptions.
	• Repeat the entire process for each dataset (all wide and longs of part 1 & 2).

• Increase the number of variables allowed by the software	• *clear* *set maxvar 10000*
• Increase the size of the results window display	• *set scrollbufsize 700000*

• Specify the directory/path to the copy of the raw data	• Use the cd command, for example: *cd "Z:\Data_Cleaning\Stata"*
• Import the copy of your raw data into your software package	• Use the import command with clear in order to start from a clean slate, make sure to specify the bindquotes option with strict as else it might mess up how it delimites doulbe quotes, for example: *import delimited Long_format_22.10/FATE_Rwanda_Part_1_221018_ final.csv, bindquotes(strict) clear*

Deleting Cases

- <mark>Perform these steps only for the wide and long_final datasets of part 1 & 2.</mark>
- As a general rule, you should not delete any data!
- The only exception is if all or almost all entries (including key demographics) are blank for a household. This may be the case if the enumerators wrongly submitted a trial run or an aborted interview. We do this step at the start so that the faulty submissions don't add confusion when doing all subsequent cleaning steps (e.g. adding new identifiers, doing consistency checks, etc.).

What?	How? (STATA syntax)
• Delete line if there are no observations ("blank row")	• *egen nmiss = rowmiss(_all)* *display c(k)* *drop if nmiss==c(k)-1* • Alternatively you can install the "missings" package and type the following: *missings dropobs _all, force* *display r(n_dropped)*
• Delete line if almost all entries are blank	• *ds,* *return list* *local varlist=r(varlist)* *egen count_miss=rowmiss(`varlist')* *capture describe* *generate count_miss_prop=count_miss/r(k)*100* *list count_miss_prop* *list submissiondate code_id village today_date a2_nameprim key if count_miss_prop>99* *count if count_miss_prop>99* **check the list and double check (if necessary in the dataset) to see if you really want to delete those observations* *drop if count_miss_prop>99.5* *count* • You can also check the percentage of missing observations like this: *missings report, observations percent*

Tidying Dataset

- Perform all steps in each dataset (wide and all longs of part 1 & 2).

- Make sure that the dataset is tidied up as follows

What?	How? (STATA syntax)
• Fonts have been harmonised	• Automatically done in Stata when importing the csv file.
• Leading and trailing spaces of string variables have been deleted	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *replace `var'=stritrim(`var')* *}*
• Put all string variables into lower case	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *replace `var'=lower(`var')* *}*
• Put all variable names into lower case and delete spaces	• We don't need to delete spaces as Stata doesn't allow them in variable names anyways, only put in lower case: *rename *, lower*
• Replace all the NA and DK and convert only the variables with single numbers to numerics	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *replace `var'=".a" if `var'=="na" & length(`var')==2* *replace `var'=".b" if `var'=="dk" & length(`var')==2* *}*  *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *count if strmatch(`var',"* *")==1	regexm(`var',"[a-zA-Z]")==1 & regexm(`var',"\.a")==0 & regexm(`var',"\.b")==0* *if r(N)==0 {* *destring `var', replace* *}* *}*
• Once, all the NA and DK have been changed, check for inconsistencies in alphabetic responses or categories by showing all string responses containing any alphabetical letters	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *list `var' if `var'!="" & regexm(`var',"[a-zA-Z]")==1* *}*
• Go through the entire list and check for mislabeled categorical string labels, i.e. separate classes that should really be the same, e.g. If 'there is kgs' and 'kilo' and "kg", you should combine them. Modify this code to correct all mislabeled categorical variables	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *replace `var'="kg" if `var'=="kgs"	`var'=="kilo"	`var'=="kilos"* *}*
• Check for remaining inconsistencies (adjust relevant variable names according to dataset)	• You can exclude variables that you don't want to check as follows (this depends on the dataset): *preserve* *drop submissiondate a13_codeenumerator village starttime today_date a2_nameprim fam_name* end_time instanceid key*

	ds, has(type string) *foreach var of varlist `r(varlist)' {* *list `var' if `var'!="" & `var'!="kg" & regexm(`var',"[a-zA-Z]")==1* *}* *restore*
• List variables containing multiple answers	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *count if strmatch(`var',"* *")==1 & regexm(`var',"[a-zA-Z]")==0* *if r(N)>0 {* *list `var' if `var'!=""* *}* *}*
• List only the multiple answer observations	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *list `var' if strmatch(`var',"* *")==1 & regexm(`var',"[a-zA-Z]")==0 & `var'!=""* *}*
• Show all string responses that contain any number	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *list `var' if regexm(`var',"[0/9]")==1* *}*
• Make sure that there are no variables containing only single numbers that are characterised as strings. The following commands should yield no result	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *count if strmatch(`var',"* *")==1 | regexm(`var',"[a-zA-Z]")==1 & regexm(`var',"\.a")==0 & regexm(`var',"\.b")==0* *if r(N)==0 {* *list `var' if `var'!=""* *}* *}*
• Save everything you have done up to now under the name clean_draft	• For example: *save Wide_format_22.10/FATE_Rwanda_Part_1_221018_final_WIDE_clean_draft, replace* *clear*

Checking and Correcting Identifiers

- <mark>Perform all steps in the wide and long_final datasets of part 1 & 2).</mark>
- Each household will receive its unique identifier. We therefore have to first make sure that the code_id is attached to the correct household and that it is the same household for a specific code_id in part 1 and part 2. We will merge certain key characteristics of part 1 and 2 to check if the households match but we will continue working on the separate datasets after.

What?	How? (STATA syntax)
• First correct any wrong IDs of part 1, e.g. if they exist twice, manually in accordance with your sample frame. Part 1 code_id must be unique so that we can match part 1 and 2 of the survey correctly for each household. If you have discovered some manifest errors in the identity of the respondent, such as wrong code_ids or gender, correct them directly in the wide and long datasets of part 1 and 2 via the use command in your	• Run do-files provided by the project

do-file. Inspect households that were not available and have most entries missing (avail!=1) and mark them with "delete".	
• Then prepare part 2 for the merger. Inspect households that were not available and have most entries missing (avail!=1) and mark them with "delete". You don't need to check anything here, we will do that in the merged file.	
• Merge the key identifiers of part 1 and 2 in a new dataset to check if each household is correct • Now undertake as many cross-checks as possible in order to ensure that each household of part 1 corresponds to the correct household of part 2. Check any inconsistencies manually with the sampling frame and describe the problem. This is the most tedious cleaning step and might take some time. • If you have discovered some manifest errors in the identity of the respondent, such as wrong code_ids or gender, correct them directly in the relevant wide and long datasets of part 1 and 2 via the use command in your do-file. Other inconsistencies (such as different household types or agricultural production), do not have to be changed as it is up to the analyst how to deal with them (they might exclude them or make certain assumptions such as that every household has a vegetable garden). You should nevertheless describe these inconsistencies in a new variable called "remarks". They might in part be based on different interpretations of the question. • Make sure to save all the keys if the entire code_id will be deleted in a new dataset that you can later use for the long do-files of part 1 (other than long_final), see below.	
• Now merge the corrected datasets and run all checks again to see if they now yield the correct results.	

Adding new Identifiers

- Perform all steps in each dataset (wide and all longs of part 1 & 2).
- When you are sure that all your households are identified correctly and the data cleaning has been done, create new unique household identifiers in the following way (we will not create unique identifiers for each individual). This is to create simple, totally anonymised and unique identifiers across all datasets. We do this step before the consistency checks so that we have already corrected any possibly wrong household entries.

What?	How? (STATA syntax)

• Create new unique identifiers:
   o *Country code / last two digits of year in which survey took place/random consecutive three-digit household number (preceeded by zeros as*
	• Run do-files provided by the project
	• This is the key step in it creating new unique identifiers:
	   set seed 2345
	   gen random=runiform()
	   sort code_id, stable
	   by code_id: gen group_random=random[1]
	   egen sequence=group(group_random), missing
	   gen survey="418"
	   tostring sequence, replace format(%03.0f)
	   gen new_identifier=survey+sequence
	   destring new_identifier, replace
	   sort new_identifier

placeholders if necessary)	
• Create an identifier template that you can use after to add the unique identifiers into each dataset.	• This step is included in the do-files provided by the project: *preserve* *keep code_id key_part1 dup_key_part1 new_identifier* *order new_identifier, first* *duplicates drop if dup_key_part1>0* *drop dup_key_part1* *rename key_part1 key* *save Identifiers/New_identifiers_part1_key, replace* *restore*
• Make sure to use the correct file	• For example: *use Wide_format_22.10/FATE_Rwanda_Part_1_221018_final_WIDE_idcheck, clear*
• Merge unique identifier variables into all datasets using the key variable	• Part 1, wide and long_final formats: *merge m:1 key using "Identifiers/New_identifiers_part1_key"* *order new_identifier, first* *list if new_identifier==. /*this list should be empty*/* *list if _merge!=3 /*this list should be empty*/* *save Wide_format_22.10/FATE_Rwanda_Part_1_221018_final_WIDE_idcheck, replace* • Part 1, all other long formats: *merge m:1 parent_key using "Identifiers/New_identifiers_part1_parent_key"* *order new_identifier, first* **check if _merge 1 observations are households that have been deleted* *preserve* *keep if _merge==1* *keep new_identifier parent_key _merge* *rename _merge _merge_master* *merge m:1 parent_key using "Identifiers/Deleted_households"* */*now go manually through list and identify all anomalies*/* *restore* *drop if _merge==1* *list if new_identifier==. /*this list should be empty*/* *list if parent_key=="" /*this list should be empty*/* *save Long_format_22.10/FATE_Rwanda_Part_1_221018_final-consent_given-hired_labour-repeat_cc5_idcheck, replace* • Part 2, wide and long formats: *merge m:1 key using "Identifiers/New_identifiers_part2_key"* *order new_identifier, first* *list if new_identifier==. /*this list should be empty*/* *list if _merge!=3 /*this list should be empty*/* *save Wide_format_22.10/FATE_Rwanda_Part_2_221018_final_WIDE_idcheck, replace*

Consistency Checks

- We undertake some key consistency checks at this stage. However, we don't check for all possible inconsistencies. First, many rules were already inserted in the ODK file in order to avoid logical problems from the start and we don't have to re-check for most of them (some were also inserted in order to facilitate the question presentation but are not relevant for analysis and can be ignored). Second, it is up to the analyst to detect and deal with outliers. We therefore went through all the survey questions and prioritised the following consistency checks that you should undertake now. The rest is up to the analyst.
- Mark all the inconsistencies you find but don't change any data. It is up to the analyst to effect those changes and to justify and document them.

What?	How? (STATA syntax)
• Undertake one check after the other	• Within a do-file, each check is a separate activity. The checks should be run, one at a time, where the list is checked and the problems identified and documented before the next check is run. DO NOT RUN the complete do-file at once! You will get garbage and you will not be able to figure out which listings to work on before working on others.
• Skipping: Certain variables should only have values if the answer to a previous filter question appropriate. However, as the skipping functions have been inserted in the original xls files, we will only double check module filter questions in part 1 as they would have the largest impact (see priority skipping checks below). Make sure that the original xls files contains all the necessary skipping functions, if that is not the case or if you want to add skipping checks, here is an example:	• Let's assume that if the filter question has a value of 1, there should be data in the subordinate questions and that if the filter question does not have a value of 1, there should be no data in the subordinate questions. We can then check if the skipping worked correctly with the following command (which can be adapted to match other skipping cases): *foreach var of varlist consent {* *gen s`var'=.*   *replace s`var'=1 if `var'==1*   *replace s`var'=0 if s`var'!=1*   *list `var' if s`var'==0* *}*

Consistency Checks for Part 1

What?	How? (STATA syntax)
Checks in wide	
• We repeat several of the commands (e.g. forval) below on string variables with almost the same name (e.g. b1_name_1 to b1_name_11). We include as many numbers of the variable as there are string variables, e.g. if b1_name_12 is a numeric variable because there are only missing values (i.e. no household had 12 members), we cannot include it in the command as it would lead to a type mismatch.	
• The checks in this section are only possible in the wide format of part 1, however, you should also add all the checks of the long formats of part 1 (see below) to the do-file for the wide format so that you can check independently. The syntax will have to be adapted accordingly.	
• Priority skipping check module A: Check that there	• *list new_identifier if hh_people_nb==0*

	are household members		
•	Priority skipping check module B	•	*list new_identifier if wage_employment!=1 & wage_employ!=""*
•	Priority skipping check module C	•	*list new_identifier if cd2_labour_exchange!=1 & howmany_exchange!=""*
•	Priority skipping check module Da	•	*list new_identifier if cd1_agr_production!=1 & cd1_how_many!=""*
•	Priority skipping check module Db	•	*list new_identifier if cd1_agr_production!=1 & cb1_crop!=.*
•	No priority skipping check for module Dc necessary		
•	No priority skipping check for module De necessary		
•	Priority skipping check module E	•	*list new_identifier if cc5!=1 & activities_hired_work!=""*
•	Priority skipping check module F	•	*list new_identifier if da1_ownland!=1 & daa_plots!=.* *list new_identifier if da1_ownland!=1 & da9_landcoop!=.* *list new_identifier if da4_rent_to!=1 & da4_rent_plot!=.* *list new_identifier if da5_otherland!=1 & da5_owner_other!=.*
•	No priority skipping check for module G necessary		
•	No priority skipping check for module Z necessary		
•	Check household type with gender of head	•	*forval i=1/45 {* *list new_identifier if (b02_hh_member_gender_ `i'==2 & b03_hhrelationship_ `i'==1 & a7_hhtype==3) |* *(b02_hh_member_gender_ `i'==1 & b03_hhrelationship_ `i'==1 & a7_hhtype==2)* *}*
•	Check that each paid working household member is older than 14 years old	•	*forval i=1/11 {* *forval j=1/4 {* *list b1_name_ `i' if b1_name_ `i'==name_display_ `j' &* *name_display_ `j'!="" & b04_hh_member_age_ `i'<14* *}* *}*
• •	Check if any numeric variables are negative If any other variables other than GPS location have negative values, mark them	•	*preserve* *drop gpslatitude* *ds, has(type numeric)* *foreach var of varlist `r(varlist)' {* *list `var' if `var'<0* *}* *restore*
•	Check that each unpaid working household member is older than 14 years old	•	*forval i=1/11 {* *forval j=1/2 {* *list b1_name_ `i' if b1_name_ `i'==name_display2_ `j' &* *name_display2_ `j'!="" & b04_hh_member_age_ `i'<14* *}* *}*
•	List all the production units other than "kg": first check that everything that should be "kg" is	•	*ds, has(type string)* *foreach var of varlist `r(varlist)' {* *list `var' if strmatch("`var'","*prod_unit*")==1 & `var'!="" & `var'!="kg"* *}*

spelled correctly, you then might have to convert the rest using a locally appropriate conversion factor or deal with them in some other way in the analysis.	
• Show all the area units that are not pre-coded. You might have to convert them using a locally appropriate conversion factor or deal with them in some other way in the analysis.	• *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *list `var' if strmatch("`var'","*unit_other*")==1 & `var'!=""* *}*
• Check that if others were selected, that they are the same activities for across module E	• *preserve* *forval i=1/3 {* *forval j=1/5 {* *tostring cc2_2_activity_hired`i'_`j', replace* *replace cc2_2_activity_hired`i'_`j'="" if cc2_2_activity_hired`i'_`j'=="."* *gen test_`i'`j'=1 if activities_hired_work`i'==activities_most_work`i' &* *activities_hired_work`i'==cc2_2_activity_hired`i'_`j'* *list activities_hired_work`i' activities_most_work`i'* *cc2_2_activity_hired`i'_`j' if test_`i'`j'!=1* *}* *}* *restore*
• If there are child-headed households verify the age	*forval i=1/45 {* *list b1_name_`i' if b03_hhrelationship_`i'==1 & a7_hhtype==4 &* *b04_hh_member_age_`i'>18	b03_hhrelationship_`i'==1 & a7_hhtype==4* *& b04_hh_member_age_`i'<10	b03_hhrelationship_`i'==1 &* *a7_hhtype==5 & b04_hh_member_age_`i'>18	b03_hhrelationship_`i'==1* *& a7_hhtype==5 & b04_hh_member_age_`i'<10* *}*
• Check that the household size is equal to the maximum of household members	• *preserve* *forval i=1/45 {* *tostring b1_name_`i', replace* *gen count_`i'=1 if b1_name_`i'!="" & b1_name_`i'!="."* *}* *egen total=rowtotal(count_1-count_45)* *list new_identifier if hh_people_nb!=total & hh_people_nb!=.* *restore*
• Check gender of primary respondent with gender in household list	• *forval i=1/11 {* *list new_identifier if a2_nameprim==b1_name_`i' & a2_nameprim!="" &* *a8_gender!=b02_hh_member_gender_`i'* *}*
• Check that primary	• *forval i=1/11 {*

	respondent is over 18 years old	*list new_identifier if a2_nameprim==b1_name_ `i' & a2_nameprim!="" & b04_hh_member_age_ `i'<18 }*
•	Check that the primary respondent is a household member (mistakes could be due to spelling error!)	• *list new_identifier if a2_nameprim!=b1_name_1 & a2_nameprim!=b1_name_2 & a2_nameprim!=b1_name_3 & a2_nameprim!=b1_name_4 & a2_nameprim!=b1_name_5 & a2_nameprim!=b1_name_6 & a2_nameprim!=b1_name_7 & a2_nameprim!=b1_name_8 & a2_nameprim!=b1_name_9 & a2_nameprim!=b1_name_10 & a2_nameprim!=b1_name_11*
Checks in long_final		
•	Households should only have been replaced if nobody was available in the household	• *list new_identifier if avail!=1 & replacement_id==.* *list new_identifier if avail==1 & replacement_id!=.*
•	Check that only one id was given per household	• *list new_identifier if code_id!=. & replacement_id!=.* • Alternative ways of checking that could be employed throughout: *assert code_id!=. if replacement_id!=.* • Or: *count if code_id!=. & replacement_id!=.*
• •	Check if consent was given If the consent is missing but questions were answered, keep the household. If the consent was no or if almost no questions have been answered, delete the household	• *list consent if consent!=1*
• •	Check that there are no duplicates of primary respondents If there are duplicates you might check if they are from different households after unique identifiers have been developed (see below)	• *duplicates list a2_nameprim if a2_nameprim !=""*
•	Check gender of primary respondent with status	• *list a2_nameprim if (a8_gender==2 & status==5)	(a8_gender==1 & status==4)*
•	Check household type with primary respondent	• *list a2_nameprim if (a8_gender==2 & status==1 & a7_hhtype==3)	(a8_gender==2 & status==1 & a7_hhtype==4)	(a8_gender==1 &*

		•	*status==1 & a7_hhtype==2) | (a8_gender==1 & status==1 & a7_hhtype==4)*
•	Check that all households have at least 1 member	•	*list new_identifier if hh_people_nb<=0*
•	Check that years are formatted correctly	•	*foreach var of varlist da2g_surfaceprod da5_aquires1{* *list `var' if (`var'!=. & `var'<1900) | (`var'!=. & `var'>2018)* *}*
•	Check that percentages are correct	•	list df9_interest if df9_interest!=. & df9_interest>100 & df9_interest<0
Checks in long_final-consent_given-repeat_hh			
•	Check for duplicate household members	•	*duplicates list b1_name if b1_name!=""*
•	Check age difference between oldest child and head	•	*by new_identifier, sort: egen head_age=min(b04_hh_member_age) if b03_hhrelationship==1* *by new_identifier, sort: egen oldest_child=max(b04_hh_member_age) if b03_hhrelationship==3* *by new_identifier, sort: egen min_head_age=min(head_age)* *by new_identifier, sort: egen max_oldest_child=max(oldest_child)* *by new_identifier, sort: gen difference=min_head_age-max_oldest_child* *list difference b1_name new_identifier if difference < 15*
•	Check age of head	•	*list b1_name if b04_hh_member_age<18 & b03_hhrelationship==1*
•	Check age of spouse	•	*list b1_name if b04_hh_member_age<18 & b03_hhrelationship==2*
•	Check age and marital status	•	*list b1_name if b6_marstat!=1 & b6_marstat!=.a & b6_marstat!=.b & b6_marstat!=. & b04_hh_member_age<18*
•	Check age and education status	•	*list b1_name if b04_hh_member_age<10 & b8_education>16 & b8_education!=96 & b8_education!=.*
Checks in long_final-consent_given-repeat_wage_employment			
•	No consisteny checks specific to this dataset		
Checks in long_final-repeat_multiplicity			
•	Check that there are no more than 31 working days per month	•	*list bb7_work_day_permonth if bb7_work_day_permonth>31 & bb7_work_day_permonth!=.*
•	Check that there are no more than 24 working hours per day	•	*list bb8_work_hours_perday if bb8_work_hours_perday>24 & bb8_work_hours_perday!=.*
Checks in long_final-consent_given-repeat_cd			
•	Check that there are no more than 365 working days per year	•	*list cd6_work_days if cd6_work_days>365 & cd6_work_days!=.*
•	Check that there are no more than 24 working hours per day	•	*list cd7_hours if cd7_hours>24 & cd7_hours!=.*
Checks in long_final-consent_given-repeat_agrprod			

• No consisteny checks specific to this dataset	
Checks in long_final-consent_given-hired_labour-repeat_cc5	
• Check that there are no more than 365 working days per year	• *foreach var of varlist hire_onetime m1_b m1_d m1_f m1_h m1_j m1_l{* *list `var' if `var'>365 & `var'!=.* *}*
Checks in long_final-consent_given-repeat_cc2	
• Check that there are no more than 365 working days per year	• *foreach var of varlist cc4_work_day cc14_number {* *list `var' if `var'>365 & `var'!=.* *}*

Consistency Checks for Part 2

What?	How? (STATA syntax)
Checks in wide & long_final	
• Check if any numeric variables are negative • If any other variables have negative values, mark them	• *ds, has(type numeric)* *local varlist `r(varlist)'*  *local toexclude r1_1 r1_2 r1_3 r1_4 r1_5 r1_6 gpslatitude*  *local varlist: list varlist - toexclude*  *foreach var of local varlist {*  *list `var' if `var'<0* *}*
• Check if the person was available	• *list avail if avail!=1*
• Check if consent was given • If the consent is missing but questions were answered, keep the household. If the consent was no or if almost no questions have been answered, delete the household	• *list consent if consent!=1*
• Check that there are no duplicates of respondents • If there are duplicates you might check if they are from different households after unique identifiers have been developed (see below)	• *duplicates list a3_primary if a3_primary !=""*
• Check household type with respondent	• *list a3_primary if (a3b_gender==2 & a3c_relationship ==1 & a4_hhtype==3)	(a3b_gender==2 & a3c_relationship ==1 & a4_hhtype==4)	(a3b_gender==1 & a3c_relationship ==1 & a4_hhtype==2)	(a3b_gender==1 & a3c_relationship ==1 & a4_hhtype==5)*

•	If there are child-headed households verify the age	•	*list a3_primary if a4_hhtype==4 & a3b_age>18	a4_hhtype==4 & a3b_age<10	a4_hhtype==5 & a3b_age>18	a4_hhtype==5 & a3b_age<10*
•	Check age of head	•	*list a3_primary if a3b_age<18 & a3c_relationship==1*
•	Check age of spouse	•	*list a3_primary if a3b_age<18 & a3c_relationship==2*
•	Check if any houshold head or spouse was replaced	•	*list a3_primary a3c_relationship a3b_age if a3c_relationship!=1 & a3c_relationship!=2 & a3c_relationship!=.*
•	Check crop and coffee questions	•	*foreach var of varlist i03_inputplot i04_tecno i05_fert i06_labor i07_harvest i08_selling i08_seed i08_income { list `var' if i01_crop1_1!=1 & i01_crop1_2!=1 & i01_crop1_3!=1 & i01_crop1_4!=1 & i01_crop1_5!=1 & `var'!=. }*
•	Check finances and household type	•	*list new_identifier if a4_hhtype!=1 & i11_finance1!=.*
•	Check ownership and household type	•	*foreach var of varlist i1_houseownership i2_hhgoods i3_productiveassets i4_livestock i6_whobuys_agr i8_whobuysmajor i9_whobuyspurchases { list `var' if (a4_hhtype!=1 & `var'==3)	(a4_hhtype!=1 & `var'==5) }*
•	There is a large number of possible time-use inconsistencies depending on the context and they cannot be checked here. Random checks have been effected in the field which must suffice. The rest is up to the analyst.		
•	Check that there are no more than 365 days per year	•	*list excessive_hours if excessive_hours>365 & excessive_hours!=.*

The data verification will continue into the actual analysis. Some problems cannot be identified until analysis has begun.

Dealing with Missing Data

- Don't delete missing data, however, you cannot simply ignore missing values in your dataset either.
- In general, do not assume missing observations to mean 0 (for example, most "how many" questions only allowed an integer as answer so no answer might mean 0 but it is also possible that the person didn't know the answer but there was no choice for DK) unless this is heavily suggested by answers to previous questions or other variable within the housheold.
- Analysts should report how many observations are missing and inform the reader how missing data was handled.

What?	How? (STATA syntax)
• Do not drop observations that have missing values or impute the missing values based on other observations! You should always tell your algorithm that a value was missing because missingness is informative.	• Stata automatically assigns a "." for missigness to each missing numeric value upon import and a "" (blank) for missingness for each string value. • In addition to the default ".", which is called the "system missing value" or sysmiss, Stata has 26 other numeric missing values: ".a", ".b", ".c", ..., ".z", which are called the "extended missing

		values". This helps us to assign different reasons for missingness, such as NA (.a) or DK (.b), see below.
	• Skipped questions: If certain questions did not appear in the question path, mark them as missing values.	• Stata automatically assigns a "." for answers in relations to questions that have been skipped.
• We do not distinguish here if a missing answer has been skipped or was left out despite the question having appeared. However, if needed, the analyst can always go back and test for each case if a variable was skipped or is missing despite the question having appeared. This might be the case if there is a very large number of missing values. The analyst can use descriptive statistics to see how many are missing and should look for meaning in non-random missing values. Maybe the respondents are indicating something important by not answering one of the questions or maybe an enumerator consistently left out questions despite them having appeared. There is a variety of statistical methods available for handling missing data. It is up to the analyst to use, document and justify the most appropriate one for his/her case.		

Dealing with Outliers

- It always helps to use descriptive statistics to get to know your data better and to check for problems and potential outliers. Here are some useful commands in that regard: codebook, describe, summarize, list, tabstat, tabulate (helpful explanations are provided in IFPRI, 2018). Plotting numeric variables might also be particularly helpful in identifying outliers.
- However, don't change any answers! Leave all outliers in the dataset. It is up to each researcher to deal with outliers in their variables. This is because different analysis goals require different outlier treatments and it is up to each analyst to choose the method most appropriate for his/her case.
- Exception: if you are very sure that an entry is wrong (e.g. because it is logically incoherent as for example shown by a consistency check), you can change it by the correct value or make it a missing variable, however, you MUST document this in the change log including the original value so that it is always possible to go back if necessary.

Labelling

In order to help you with the labelling process, we first prepare a new and separate dataset (i.e. not in your do-file) based on the choices sheet of the xls forms used in the survey. Proceed as follows:

- Copy the original xls form of part 1 used in the survey. Rename the copy to end in _replaced. Only work in the copy from now on. Open it with Excel.
- In the choices sheet, select the entire name column (column B), go to Home/Find & Select/Replace… under "Find what:" type "NA", under "Replace with:" type ".a". Click "Options >>" and make sure to tick the box that says "Match case" and "Match entire cell contents" and then click "Replace All".
- In the choices sheet, select the entire name column (column B), go to Home/Find & Select/Replace… under "Find what:" type "DK", under "Replace with:" type ".b". Click "Options >>" and make sure to tick the box that says "Match case" and "Match entire cell contents" and then click "Replace All".
- Save the xls file.
- Open a new dataset in your software package. Now copy the entire 4 first columns of the choices sheet of the xls form _replaced of part 1 used in the survey. Special paste them (selecting "Tab" as delimiter) into the data-editor (in the edit mode) of your software package. Save that dataset under the name "Value_labels_part1".
- Repeat the same procedure for part 2.

How? (STATA syntax)

- Run the following commands in the "Value_labels_part1" dataset in order to create an answer list with the appropriate syntax to copy and paste the value labels rather than having to type them each time:

  drop var3
  replace var4= `"""" + var4 + `""""
  forvalues i=10/100 {
  replace var4=regexr(var4,"`i'. ","")
  }
  forvalues i=1/9 {
  replace var4=regexr(var4,"`i'. ","")
  }
  foreach var of varlist var4 {
  replace `var'=stritrim(`var')
  }
  egen value_label = concat(var2 var4), p(" ")
  save Z:\Data_Cleaning\Stata\Labels\Value_labels_part1, replace

- Export the dataset under the name "Value_labels_part1" to excel (export data to excel spreadsheet) selecting "Save variable names to first row in Excel file" and open the excel file. You can copy the value label list in the "value_label" column into the do-file as needed.

- Repeat the same procedure for part 2.

- The #delimit ; command is useful in do-files if you want to paste long lists (e.g. of variable names or value labels) from excel and you only have them in column. Stata will read everything before a semi-colon as one line and you don't have to type all the names in one row.

- However, once we change the line delimiter to semicolon, all lines, even short ones, must end in semicolons. Stata treats carriage returns as no different from blanks. We can change the delimiter back to carriage return by typing #delimit cr.

- Attach value labels to your variables in the following way, using var1 (list name) of "Value_labels_part1/2" as the name for the value labels :

  #delimit;
  label define gender
  1 "Male"
  2 "Female";
  foreach var of varlist a8_gender a14_genderenumerator {;
  label val `var' gender;
  };

- The loop attaches the same label to multiple variables and can be expanded as needed.

- Use the survey question in the "label" column of the "survey" sheet of the original xls file to label the variables and label variable. You can also use a loop for multiple-choice dummies or variables in repeat sections of the wide format.

- SurveyCTO also created a Stata_do_template. While we cannot use that directly for our data cleaning here, you can copy and paste parts of the labelling section so that you don't have to copy each survey question from the original xls file.

- You might have to include syntax so that only numeric variables are labelled (otherwise, if string variables are included in the loop, e.g. because another variable with _other attached is included, you will encounter an error message).

  ds, has(type string)
  local strings `r(varlist)
  #delimit;

```
                    label define read
                    1 "Cannot read and cannot write"
                    2 "Can write only"
                    3 "Can read only"
                    4 "Can read and write "
                    96 "Other, specify"
                    .a "NA"
                    .b "DK";
                    #delimit cr
            foreach rgvar of varlist b9_read_* {
                    label variable `rgvar' "Can \${b1_name} read and write?"
            }

                    unab want: b9_read_*
                    local numerics : list want - strings
                    label values `numerics' read
```

- Multiple-choice variables are read as strings by Stata, however, string variables cannot be labelled in Stata. Fortunately, SurveyCTO automatically split all the select_multiple answers into additional dummy variables (both in the long and wide csv formats). Dummy variables have been created for each choice in the choice list, regardless if that choice was ever chosen or not, and whether that question was ever asked or not. You don't have to do anything else with multiple-choice variables other than labelling them. It is up to the analyst to decide how to deal with multiple-choice questions.

- Since multiple-choice variables have been split, you have to define a value label for each split variable and attach that value label to the correct split variable. Make sure that the value label always has the number 1 in front of it as a dummy variable by definition is only 1 or 0 (or missing). You might have to include syntax so that only numeric variables are labelled (otherwise, if string variables are included in the loop, e.g. the original multiple-choice variable, you will encounter an error message).

```
            foreach rgvar of varlist cd4_return_* {
                    label variable `rgvar' "Does \${name_display2} receive anything in return from this
                    employer?"
                    }
            label define return_1                       1 "No return"
            label define return_2                       1 "Cash"
            label define return_3                       1 "Goods"
            label define return_4                       1 "Labour"
            label define return_5                       1 "Food or drink"
            label define return_96              1 "Other, specify"
                    forval i=1/5 {
                    foreach var of varlist cd4_return_`i'_* {
                            capture confirm numeric variable `var'
                            if !_rc {
                                    label values `var' return_`i'
                            }
                    }
            }
                    foreach var of varlist cd4_return_96_* {
                            capture confirm numeric variable `var'
                            if !_rc {
                                    label values `var' return_96
                            }
                    }
```

- Save everything you have done up to now under the name clean_final	- For example: *save Wide_format_22.10/FATE_Rwanda_Part*

	_1_221018_final_WIDE_clean_final, replace

Anonymising Data

- Once you have finised the data cleaning process, a uniquer identifier has been created for each household and you have made sure that it has been correctly added to each dataset, you can delete all the individual names and other identifying information from the dataset. Be aware that they are spread all over the datasets due to repeat functions. Proceed in the following way in order to find them:

What?	How? (STATA syntax)
• Randomise the village and enumerator codes	• **Part 1 & 2, wide and long_final:** Run do-files provided by the project
• Make sure to use the correct file	• **Part 1 & 2, wide and long_final:** *use Wide_format_22.10/* *FATE_Rwanda_Part_1_221018_final_WIDE_clean_final_villa ge_enu, clear*
• Find all the variables containing individual names by identifying all the variables with the word "name" in variable name (those are the ones containing people's names)	• **Part 1 & 2, all wide and long formats:** • *lookfor name* • Or: *ds, has(type string)* *foreach var of varlist `r(varlist)' {*   *list `var' if strmatch("`var'","*name*")==1 & `var'!=""* *}*
• Now drop all of those variables	• **Part 1 & 2, all wide and long formats:** *drop *name**
• Drop other variables containing identifying information and drop old code_ids as they add confusion (adjust relevant variable names according to dataset). Also drop variable avail as unavailable households have been deleted and the variable does not have meaning anymore.	• **Part 1, wide and long_final:** *drop avail submissiondate code_id today_date starttime end_time *gps* instanceid key setofrepeat** • **Part 2, wide and long_final:** *drop avail submissiondate code_id a12_starttime a13_datesecondvisit a3_primary end_time *gps* instanceid key*
• Drop automatically created variables with label "reserved_name_for_field _list_labels"	• **Part 2, wide and long_final:** *lookfor reserved_name_for_field_list_labels* *foreach var of varlist `r(varlist)' {* *drop `var'* *}*
• List all the string variables in order to check that no sensitive information remains (especially in the "other" answers), else you might have to anonymise manually.	• **Part 1 & 2, all wide and long formats:** *ds, has(type string)* *foreach var of varlist `r(varlist)' {* *count if strmatch(`var',"* *")==1 & regexm(`var',"[a-zA-Z]")==0* *| strmatch(`var',"* *")==1 & regexm(`var',"\.a")==1 |* *strmatch(`var',"* *")==1 & regexm(`var',"\.b")==1* *if r(N)==0 {* *list `var' if `var'!="" & `var'!="kg"*

	} *}*
• List all the value labels to check that they contain no sensitive information (such as the village name which has already been replaced above), else you might have to anonymise manually.	• Part 1 & 2, all wide and long formats: *label list*

• Sort the table by the new identifiers and make sure that there are no duplicates in part 1 and no more than 1 duplicate in part 2	• Part 1 & 2, all wide and long_finals:
	    sort new_identifier
	    duplicates report new_identifier

• Save everything you have done up to now under the name clean_final_anonymised	• For example:
	    save
	    Wide_format_22.10/FATE_Rwanda_Part_1_221018_final_WI
	    DE_clean_final_anonymised, replace

Backup

- Make sure to backup your cleaned datasets properly.
- Related information files (do-files for data cleaning, coding books, etc.) should be included together with the backups. Copies in cloud systems without adequate security (i.e. dropbox, google drive) should be avoided.
- Make sure you still have the encrypted raw-data files and discuss with your supervisor if they should be deleted after the analysis is finished.

Appendix 3:   Examples of Interview Guides for Semi-Structured Interviews in Rwanda

Also available under the following DOI: https://doi.org/10.48620/45

Interview Guide for First Round of Target Household Interviews

Date and time: _____
Place and setting: _____

Introduction (in my own words)

1. Introduce self:

   - *My name is Patrick. I am a PhD student from Switzerland and am working for a research project that is led by CIAT and funded by the Swiss National Science Foundation and the Swiss Agency for Development and Cooperation.*

2. Purpose of study:

   - *I am interested in agriculture and work and its effect on your work and your everyday life.*
   - *I am here to learn from you and hear about your experiences. I would like to know how you personally see things. There are no right or wrong answers.*

3. Permission to record/sign consent form:

   - *I would like to ask if I could conduct an interview with you about this. There is no problem if you don't want to participate, you can just tell me. And if you decide to participate, we really appreciate your time but unfortunately, we are not in a position to pay you for the participation.*
   - *If you agree, our conversation may last approximately 1h 30 min.*
   - *I would like to audio-record the interview with this device in order for me to relisting later and write down your answers. The recording won't be shared with anyone outside the research project.*
   - *In addition, everything you say will remain anonymous (it will not have your name on it). I might quote and publish small parts of your responses in my dissertation but if I do so, I will only do it in a manner in which you cannot be identified (e.g. replacing your name with another).*
   - *Please tell me if you have any questions or if you want me to clarify something along the way. If I ask about anything you don't want to talk about, please just say you'd rather not go into that. You are also welcome to stop the interview at any time or to ask me to turn off the recorder.*
   - *Do you have any questions about what we discussed?*
   - *Do I have your permission to conduct and audio-record this interview?*

Thank you very much for your time!

Start recording

Main Themes	Narrative Questions	Prompts ("Checklist" Questions)
Self-employment		
Work and land	A) Can you describe the work on your land?	1) Who does what? 2) Do you buy most of your food? 3) Do you do any kuragiza? What is the arrangement (price, veterinary costs, babies, milk, etc.)? What do you think about it? 4) Where do you graze your livestock? 5) Do you do any sharecropping (nyiragabana)? What is the arrangement (seeds, fertilisers, pesticides, harvest labour)? For what period? Who decided what crop to plant and why? How do you pay? What do you think about the arrangement? Is it easy to find? Do you make the agreement in writing? 6) When was sharecropping introduced in this village? (Where does it come from?) 7) Do you rent in or out any land for cash? What is the arrangement (seeds, fertilisers, pesticides, harvest labour)? For what period? Who decided what crop to plant and why? How do you pay? Do you make the agreement in writing? 8) Who decides if you pay in cash or with harvest? 9) Do you prefer sharecropping or renting land for cash? 10) Who decides what to plant on your own plot? 11) Are you part of the land-use consolidation programme? 12) What is uruteerane? 13) Do you work in marshlands? What is the arrangement? 14) Do you have access to any other land?
Cooperatives	B) Do you perceive cooperative membership as beneficial?	15) Are you member of any cooperative, farmer's association or other group? How is it called? Why/why not? 16) What support do they provide? 17) What do you have to contribute (money, harvest, labour, etc.? 18) What are the main problems with cooperatives?
Background	C) How did you come to be a coffee farmer?	19) Why did you start producing coffee? Why did you decide to not grow any coffee? 20) (Why) is coffee important to you?

Category	Prompt	Questions
		21) What is the biggest challenge being a coffee farmer?
Processing and sale	D) Can you describe what happens to the coffee after harvesting?	22) (When and how often do you sell your coffee?)
		23) To whom do you sell your coffee (broker, cooperative, washing station, etc.)? What are the reasons? Where are they from?
		24) Are there any other potential buyers? Why did you not choose them? Where are they from?
		25) Where do you process and sell your coffee outside of the harvest season?
		26) Do they offer different prices? Do the prices vary throughout the year? When are you paid usually?
		27) Does the buyer provide anything other than the payment (e.g. training, seeds, fertilisers, pesticides, contract farming)?
		28) How do you get the inputs for growing coffee (seeds, fertilisers, pesticides)?
		29) What activities do you participate in after harvesting (e.g. work on coffee washing station)? Why/why not?
Savings	E) What do you do with the money you receive from selling coffee?	30) Do you save it and spread it out throughout the year?
		31) How do you maintain yourself in the six months leading up to the coffee harvest?
Labour market		
Hiring out	F) What do you do when you are not working on your land?	32) What kind of work do you do?
		33) Do you work for others or other companies? If so, where?
		34) What kind of work do you like/dislike and why?
		35) What is the highest/lowest paid work you did? Does the payment vary throughout the year?
		36) Do you prefer payment in kind or in cash?
		37) Does your employer provide any equipment or meals?
		38) Are you allowed to bring your baby? Does this affect your payment?
		39) What are the usual working hours? What happens if it starts raining heavily?
		40) Do you do any Kwisuma (casual work carrying things)? How is it seen by other people?
		41) Do you sell (e.g. at market or roadside)?

	42) What are the challenges related to work outside your farm? What is the hardest part about working for others?
	43) What are the disputes with your employers most often about?
	44) Did you ever quit ongoing employment?
	45) What kind of work do you want to do?
	46) What is the most difficult time of the year to find work? How do you maintain yourself then?
Fishing	G) Do you fish sometimes?
	47) How much? With whom? Are you part of a fishing cooperative?
	48) Do you own a boat or net?
	49) How are you paid?
	50) Where do you sell the fish?
	51) Do you use the lake for anything else (e.g. water)?
Hiring in	H) Please tell me about the people who work for you.
	52) Do you hire in any non-household labour?
	53) Who is it and how did you find them? Do you pay them?
	54) Where are they coming from? For who long do they work with you? Where do they live when they are here?
	55) What are their tasks?
	56) Are there differences between men and women?
	57) How many kilograms of red cherries does a person pick per day on average?
	58) What are the challenges when working with those people?
	59) Do you do any labour exchange (kuguzanya)? Why not? What is the arrangement (what tasks, how much, who works more)? Who are the people?
Land	
Access	I) How is the access to your land regulated?
	60) How and when did acquire your land? Reason for donation or free renting
	61) Did you register all your land? If not, why not?
	62) How is land usually inherited and passed on? Are there differences for men and women?
	63) What happens with the land at the time of marriage?

Category	Question group	Questions
Disputes	J) What are the difficulties related to land?	64) Do you ever consider selling your land? Why? 65) Have you ever lost any land? If yes, to whom? 66) Have you been compensated? 67) Did you ever experience a land dispute? If so, what was it about? How was it resolved?
General		
Challenges	K) What are the biggest challenges you face right now (ask individually)?	68) (How has your standard of living evolved over the last 10 years? How do you explain that?) 69) To what extent is life different for you as a single-headed household compared to a male- and female-headed household? How is it seen by other people? 70) What are you lacking the most? 71) What changes would you propose in order to improve your situation? 72) Would you prefer more land or more employment opportunities?
Support structures	L) What support structures do you have access to?	73) Do you receive any support from the government? If so what? 74) Do you participate in paid public works or VUP? If so, what? 75) Do you receive any support from family or friends? If so what? 76) Are you a member of any SACCO or ROSCA? Why did you decide not to join/would you like to join one?
Imihigo	M) Do you have an imihigo contract?	77) What is your target? 78) Who set the target? Is it mandatory to set a target? 79) What happens if you don't reach your target? 80) What do you think about imihigo?
Road access	N) Is road access important to you?	81) Why? 82) If there before: what has the arrival of the new road changed for you personally? 83) How often do you use the road? What for? 84) Do you often leave your cell? What for? 85) What are the main limitations living far from the main road?
Future	O) What is your hope for the future?	86) What do you wish for?

Personal details

Ubudehe category: _____ _____

Year arrived in village: _____ _____

From where: _____ _____

Closing of the interview

We are getting to the end of this interview.

- Is there anything important that I missed during the interview or that you would like to add?

- Do you have any questions?

- I am going to end the recording now.

- Thank you very much for your time

- End time: _____

Stop recording

Interview Guide for Plantation or Washing Station Manager Interviews

Date and time: _____

Place and setting: _____

Introduction (in my own words)

1. Introduce self:

   - *Hello, thank you very much for taking the time to speak with me! My name is Patrick. I am a PhD student from Switzerland and am working for a research project that is led by CIAT and funded by the Swiss National Science Foundation and the Swiss Agency for Development and Cooperation.*

2. Purpose of study:

   - *I am interested in coffee production and its effect on work and livelihoods.*
   - *You have been selected to participate in that interview because of your experience in this particular field. I am here to learn about your point of view. There are no right or wrong answers.*

3. Permission to record/sign consent form:

   - *I would like to ask if I could conduct an interview with you about this. There is no problem if you don't want to participate, you can just tell me. And if you decide to participate, we really appreciate your time but unfortunately, we are not in a position to pay you for the participation.*
   - *I would like to respect your time. How much time can you share with me for this interview?*
   - *I would like to audio-record the interview with this device in order for me to relisting later and write down your answers. The recording will be treated confidentially and won't be shared with anyone outside the research project*
   - *In addition, everything you say will remain anonymous (it will not have your name on it). I might quote and publish small parts of your responses in my dissertation but if I do so, I will only do it in a manner in which you cannot be identified (e.g. replacing your name with another).*
   - *Please tell me if you have any questions or if you want me to clarify something along the way. If I ask about anything you don't want to talk about, please just say you'd rather not go into that. You are also welcome to stop the interview at any time or to ask me to turn off the recorder.*
   - *Do you have any questions about what we discussed?*
   - *Do I have your permission to conduct and audio-record this interview?*

Thank you very much for your time!

Start recording

Main Themes	Narrative Questions	Prompts ("Checklist" Questions)
Coffee production		
Background	A) Can you tell me how your company decided to invest here?	1) For how long has your company been producing coffee in this village?
		2) Why did your company decide to invest in this village?
		3) What do you produce?
		4) Has your production area (land) changed in the last 4 years? If so, how?
		5) Has your production volume changed in the last 4 years? If so, how?
Sourcing	B) Where do you get your coffee from?	6) What are the requirements for the producers in order to sell to you?
		7) What happens to the coffee which does not meet the required standard?
		8) What varieties do you buy?
		9) Do you practice contract farming? If so, what is the arrangement?
		10) Do you provide training, seeds, fertilizer, or pesticides?
		11) Do you do any kind of certification?
		12) When and how are the farmers paid?
		13) Where do you get the daily price information from? How does the price change throughout the year? Do you buy coffee outside of the harvest season?
		14) How is the coffee collected and transported?
		15) Who does it (acheteur, kwisuma), how many, where are they from and what are they paid?
Processing and sale	C) Can you describe what happens to your product after the harvesting?	16) What activities do you perform after harvesting? Why?
		17) What types of processing do you do (e.g. honey processed)?
		18) What happens to the pulp?
		19) To whom do you sell your produce? What are the reasons?
		20) Are there any other potential buyers? Why did you not choose them?
		21) What are the biggest problems for your business in this village?
		22) How are coffee prices usually determined?
Land	D) How did you acquire your land?	23) Do you provide any support to people whose land you acquired? If so, what?
		24) Did some people refuse to sell their land?
		25) How has your investment impacted the village?

Labour	
Recruitment	E) How do you recruit your workers?
	26) How do you hire employees? Are there any worker groups or intermediaries?
	27) Where are your workers from? Why?
	28) What worker categories are there (e.g. permanent and casual)?
	29) Do you employ Kwisuma workers?
	30) How many workers do you employ and during what time of the year?
	31) Do you employ women for specific activities that are not done by men? If so, which ones and why?
	32) Do you employ men for specific activities that are not done by women? If so, which ones and why?
Working conditions	F) Can you describe the working conditions at your plantation?
	33) What do you pay? Is this the same for women/men? Is this the same for foreigners? Why?
	34) What are the working hours?
	35) Do you provide any equipment such as boots or masks? If yes, to whom?
	36) Do you provide any extra benefits, food, training, insurance, child care support, etc.?
	37) Do you provide any housing facilities for your workers?
Associations	G) How do workers organise themselves?
	38) Are there any worker's associations or similar?
	39) What activities do they do?
	40) Can you describe the relationship among the different workers?
Disputes	H) What are disputes most often about?
	41) Are there many thefts, absenteeism, late-coming or dawdling?
	42) How are disputes resolved?
	43) How do you ensure that your workforce is disciplined? How do you monitor your workers?
Looking forward	
Future	I) What are the foreseen future developments of your company?
	44) What does your company look like in 5 years?

Personal details

Position: _____ Nationality: _____

Gender: _____

Company: _____ Village: _____

Closing of the interview

We are getting to the end of this interview.

- Do you have any production/employee statistics or documents that you could share?
- Who do you think we should talk to in order to understand the context even better?
- Is there anything important that I missed during the interview or that you would like to add?
- Do you have any questions?
- I am going to end the recording now.
- Thank you very much for your time
- End time: _____

Stop recording

Appendix 4:   Interview Guide for Life Histories in Rwanda

Also available under the following DOI: https://doi.org/10.48620/45

Interview Guide for Life Histories in Rwanda

INTRODUCTION AND CONSENT

Introduce myself and the research purpose of the research:

- It's good to see you! Do you remember me? My name is Patrick. I am a PhD student from Switzerland and am working for a research project that is led by CIAT and funded by the Swiss National Science Foundation and the Swiss Agency for Development and Cooperation.

- How have you been since we last spoke?

- Last time, we have talked a lot about your situation right now. This time, I propose to talk more about your life over time. I would like to understand your journey better and the changes that have occurred along it.

- I am especially interested in changes in your work, your assets, your food and health situation over time.

- **I don't want you to talk about the war ("intambara") or the genocide. We can just talk about before and after if you like.**

- **Even so, I understand if you feel uncomfortable. I don't want to put any pressure on you. If you don't want to talk about the past, we can also take this time to talk more about your present situation. Which do you prefer?**

- **You do not have to talk about anything that you don't want to. If I ask about anything you don't want to talk about, please just say you'd rather not go into that and we can talk about something else. And if you feel uncomfortable, need a break, or want to stop the interview, you can tell me any time. You can also ask me to turn off the recorder.**

- I also invite you to ask any questions or if you want me to clarify something along the way.

Obtain informed consent:

- There is no problem if you don't want to participate, you can just tell me. And if you decide to participate, there will be no payment.

- If you agree, our conversation may last approximately 2h.

- I am here to learn from you and hear about your experiences. I would like to know how you personally see things. There are no right or wrong answers.

- I would like to audio-record the interview with this device in order for me to relisting later and write down your answers. The recording won't be shared with anyone outside the research project.

- In addition, everything you say will remain anonymous (it will not have your name on it). I might quote and publish small parts of your responses in my dissertation but if I do so, I will only do it in a manner in which you cannot be identified (e.g. replacing your name with another).

- Do you have any questions?

- Do I have your permission to conduct and audio-record this interview?

GETTING STARTED

- Record interviewee's age and gender

- Note down individual's appearance and demeanour (happy, sad, anxious etc.)

- Describe house and compound

FAMILY BACKGROUND:

- When and where were you born?
- Parents:
    - Where were the parents from? (in the case of migration from another place, when did they move and why?)
    - Monogamous/polygamous marriage?
    - Did your parents go to school?
    - What kind of work did your parents do? Role of coffee?
    - What did you learn from your parents?
- Siblings (same mother or same father)
    - Number and gender? (step-siblings?)
    - Who went to school?
    - What kind of relationship to your siblings? – Anything/anybody special?

CHILDHOOD/YOUTH:

- What assets did your parents have when you were a child (land, trees, livestock, buildings, etc.)?
- What was your health like?
- What was your food situation like?
- Did you go to school?
- How did your house compare with the house that you live in now (much better, better, the same, worse, much worse)?
- How did your parent's standard of living compare with your standard of living now?
- Where did you spend most of your childhood?
- When did you start working for others? What were the circumstances? How did you find it? What did you do?
- Did you have a happy childhood? – Why (not)?

MARRIED LIFE:

- What did you own before marriage (especially house, land and livestock)?
- Marriage:
    - When did you get married?
    - How did you meet/choose your husband? How was your husband chosen for you?
    - What was the process around getting married?
        - What did your husband or his family bring into the marriage (inkwano)?
        - What did you/your wife or her family bring into the marriage (ibirongoranwa)?
        - How did your marriage affect your land ownership? Did you inherit any land?
        - Can you describe the move to your spouse's village? Feelings/ problems
        - Can you describe how your house was set up?
- How did life change when you married?
    - Did you move homes ever while married? If yes, what were the circumstances?
    - How did it affect your work (self-employment, hiring in/out) and your responsibilities?
    - Have your belongings (especially house, land and livestock) changed? If so, how?
    - Has your food situation changed? If so, how?
    - Would you like to share how your health situation changed? If so, how?

o Do you have children? If yes, how many? sexes? age? education level?

WIDOWHOOD/SEPERATION:
- Now we would like to learn a little bit about life as a female-headed household. Is that something you are comfortable sharing with us or would you rather talk about something else?
- How did you adapt to this change?
    - o Did you move homes ever since? If yes, what were the circumstances?
    - o How did it affect your work (self-employment, hiring in/out) and your responsibilities? Has it affected your ability to access work? If so, how?
    - o Have your belongings (especially house, land and livestock) changed? If so, how?
    - o Has your food situation changed? If so, how?
    - o Would you like to share how your health situation changed? If so, how?
- Did this affect your relationship with others (family, neighbours, employers, etc.)? If yes, how so?
- Who can you turn to when you need help?
- In your life, have you ever slept outside of home in order to work? What were the circumstances?

PRESENT:
- What is your situation now?
    - o Work
    - o Land
    - o Assets
    - o Health
    - o Food

FUTURE:
- Looking forward, what life would you like your children to have?

ENDING
- What are you most proud of in your life?
- What makes you happy in life?

Appendix 5:   Template for Interview Notes

Also available under the following DOI: https://doi.org/10.48620/45

Appendix 5: Template for Interview Notes

By Patrick Illien

Interview #				
New identifier (after survey data cleaning)				
Transcript names				
Recording names				
Date				
Recording/Consent				
Approx. start time				
Sampling/access				
Location/setting				
Respondent name and function or survey household ID				
Contact				
Bystanders (role and consent), including spouses and children, and intrusions				
Appearance and demeanour (including non-verbal behaviours)				
Atmosphere				
Notable interaction/activities before and after the recording (beyond normal introduction and recording demonstration, escorting us after, etc.)				
Biases and mistakes				
Changes for the future				
Feelings/interpretation and coding suggestions				
Ideas and questions				
Potential for repeat interview (based on situation, ability to communicate and gut feeling), this does not exclude revisiting others socially.				

Appendix 6:   Transcription Guidelines

Also available under the following DOI: https://doi.org/10.48620/45

Transcription Guidelines

Author: Patrick Illien

Contents

Clean verbatim guidelines

I adapted these guidelines for my own transcripts. They were taken and elaborated upon from the following sources (in order of importance):

- Wiesli, Thea Xenia, Ulf Liebe, Thomas Hammer, and Roger Bär., 2021. "Sustainable Quality of Life: A Conceptualization That Integrates the Views of Inhabitants of Swiss Rural Regions." *Sustainability, 13*(16): 9187. https://doi.org/10.3390/su13169187 [see transcription guide in Supplementary Information 3]
- Dresing, T., Pehl, T., Schmieder, C., 2015. "Manual (on) Transcription. Transcription Conventions, Software Guides and Practical Hints for Qualitative Researchers." 3rd English Edition. Marburg. Available here.
- Humble, A., 2009. "Guide to Transcribing." Available here.
- Online posts about clean/intelligent transcription: here, here and here.

The guidelines are meant for clean (also called intelligent) verbatim transcription as opposed to true verbatim transcription, and will be used for interviews with target households. It is not paraphrasing and stays true to the voice and intended meaning of the participants. It is, however, not adequate for psychological or linguistic or discourse analysis.

Interviews with an interpreter

In most of my interviews, I had interpreters/research assistants doing oral translation of all the questions from English/French into a local language and then of the answers back into English/French. This changes the dynamic of the interview and adds complexity to the exchange and transcription, especially since the research assistants were encouraged to take on an active role. This necessitates some special rules and I have indicated in the guidelines and will help to simpliy as much as possible. Unless otherwise noted, the standard rules apply as well to interviews with an interpreter.

Only the English/French parts of the conversation will be transcribed (i.e. in most cases what was spoken by the interpreters or myself). Anything said in another language will be lost, as well as the dynamic (pauses, length of speeches, sometimes the translation is not word-by-word but longer or shorter than the original as the RA renders it legibile to me, etc). This is thus a clean (not true) verbatim transcription of the spoken English/French parts of the interview. What is said is considered more important than how it was said as most of this is lost in translation anyways and I do a thematic analysis and not a quantitative content or discourse/communication analysis. There is thus some discretion at the transcriber's disposal about what fillers and interruptions and the like are deemed relevant and which ones not.

Formatting and structure

- Transcribe everything with MAXQDA 2018, using Arial font size 11.
- At the top, insert interview code (country/year/village/count_hhtype/landownership), category, transcription style and transcriber identity in the following, anonymised way:
    - **Code:** R1812_1l
    - **Category:** Target household
    - **Style:** Clean verbatim or note-taking
    - **Transcriber:** Interviewer or transcription assistant
- At the end of the transcript, add **END OF RECORDING** in bold uppercase letters on the last line of the transcript.
- Export each transcript as "rtf", selecting "as table with paragraph numbers". Name the file according to the code name, e.g. R1812_1l.rtf
- Use I for the interviewer, RA for the research assistant/interpreter, and P for the participant/respondent. If there are several participants, use P1, P2, etc. If different people ask questions, put I2 and possibly explain their role in brackets. The main interviewer should remain I.
- Each speaker contribution receives their own paragraph. There is an empty line between the speakers. Interviews with interpreters:
    - P (or P1, P2 if there are multiple participants) marks the answer of the corresponding participant even though the spoken English/French is said by the RA. Keep the grammatical person as spoken by the RA (mostly the third person, e.g. "she said…"). I instructed the RAs to use the third person in order to mark their presence and distinguish their own contributions. However, sometimes, especially in early interviews, the use the first person. Whichever person used by the RA should be transcribed.
    - If the narration is by the same person and only interrupted for translation in between, you can put it into one paragraph. Breaks/interruptions in order to allow for translation don't have to be marked.

- o If there are several participants speaking at the same time or after one another and the response as translated by the RA is not overwhelmingly attributable to a single participant, mark "P1&2" at the start (even if one participant says more than the other – this level of detail will not be indicated). This is often the case when they agree, repeat or reinforce or complement each other's point and the RA does not distinguish between the two, e.g. both say that their youngest child is 12 years old.
- o If there are more than two respondents and their statements are not clearly assignable, put P* (meaning it is one or several of P1, P2, P3, etc.).
- o Add "RA" for all the statements made by the interpreter as himself/herself that are not attributable to the participants (usually in the first person), e.g. when clarifying with the interviewer such as "do you want me to ask again?" or "what do you mean?". This can be during a part where only the RA speaks without interruptions but you might have to split it up into several paragraphs, e.g. first a few sentences as P, then a side comment in the role as RA and then back continuing what P has said.
- o The same goes when the RA respondes to the researcher without translating the question and answer back to the participant but just clarifies himself/herself based on what the participant said before: we attribute it to the RA to indicate that the participant was not asked again, and that it might also be affected by the RA's interpretation (even though they were always encouraged to ask again if the answer wasn't already directly contained in the pariticpant's response).
- o The transcriber decides whom the statement is attributed to by choosing either P or RA. When it is clear that the answer of the participant was very short, followed by a significant explanation by the RA, it is worth indicating this even though it might not be fully clear what part was said by the participant (maybe in a statement before and didn't get translated) and what part is the RA's own knowledge and interpretation.
- o When the researcher says something that goes under in the conversation, without being translated or responded to by the RA, you can leave it away unless it seems relevant, in which case you then add [not translated]. This is because adding the statement might give the false impression that the statement was translated and that they participant or RA reacted to it when in reality they ignored it.
- o If the interviewer's contribution is directed at one person, either P or RA, and it is clear from the context who it is, you don't have to add anything. However, if the interviewer, within one contribution, directs a few sentences to P and then to RA or vice versa, split them up into different paragraphs and add [to RA] for the part that is directed at the RA to make it clear.
- Speech overlaps are marked by //. At the start of an interjection, // follows. The simultaneous speech is within // and the person's interjection is in a separate line, also marked by //. Word or sentence abort is marked by /. Interviews with interpreters:
  - o Speech overlaps and sentence aborts are not noted. Further, sometimes the RA gets cut off by the participant in asking the question when they already anticipate it. You don't have to indicate that as we don't know at which point the cut-off happened. If the answer wasn't clear, RA and interviewer normally probed further.
- Insert timestamps at the beginning of each paragraph. Interviews with an interpreter:
  - o Timestamps are set at the beginning of the English/French parts, i.e. timestamps for the response should be inserted after the respondent finished talking and before the RA starts

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translating. This is only for reasons of simplicity as it helps to quickly find and check the transcription. However, sometimes the respondent's voice should be relistened to as well in order to get the context (especially if non-verbal utterances have been noted).

- o If the respondent is talking at length, you may double the playing speed but don't jump sections as in-between comments might be lost. It cannot be read from the audio waves who is talking.
- Any non-spoken elements that need to be noted (see below) are added in brackets, i.e. [].
- Never use round parentheses, (), as they can be confusing.
- Insert memos if you need to add a commentary, question, etc. or if you don't understand a word, so that we can double check it.
- Use the following font colour coding scheme for review when necessary:
  - o **Red**: identifying information
  - o **Yellow**: unknown key words in Kinyarwanda
  - o **Blue**: questions about uniformity
  - o **Green**: pronunciation unclear or word/spelling unknown
- Work with the following shortcuts in MAXQDA:
  - o Timestamp on enter.
  - o Automatic speaker change only if one respondent (always bold) with I: and P:
  - o 0=I: (bold)
  - o 1=P: (bold) or P1: (if two speakers, bold)
  - o 2=P1&2: (bold)
  - o 3=RA: (bold)
  - o 4=[Kinyarwanda word] or [Lao word]
  - o 5=[RA clarifies without translating]
  - o 6=[incomprehensible]
  - o 7=[identity withheld]
  - o 8=[participant speaking English].
  - o 9=[participant speaking French].

Spelling and grammar

- Use proper spelling, capitalisation and punctuation.
- Informal contractions are retained (e.g. isn't, gonna, wouldn't) as well as slang vocabulary (e.g. dope fiend). It turned out that contractions were just added by the transcribers even when they were not used by the speakers – words being contracted or not has no meaning.
- Use punctuation for the sake of legibility (point or comma according to the emphasis). Three dots can be used to link two parts that belong together but don't form a coheren sentence, e.g.: I was bringing the bag to your house... these kind of tasks.
- If a person talks in a way that is not grammatically correct, type "[sic]" immediately after the error to indicate that it is actually what they said rather than an error in transcription. Interviews with an interpreter:
  - o As the grammatical level of our three RAs used is rather limited, do not put [sic] behind every mistake but make sure to transcribe what you hear without correcting the grammar [it turned out that this rule was not always followed as in the speed of writing, the grammatical person (especially the third person) was often corrected, i.e. "he go to the

market" became "he goes to the market"]. Only mark [sic] if the word or sentence is substantively wrong in order to clarify that it was not a transcription mistake, you may also add the corrected version in brackets. Exception: very often the interpreter confuses he/she, him/her or his/hers and this can be very confusing given that people might talk about themselves or others. Write the correct pronoun for the person who was referred to when the case is clear without putting [sic]. This is often the case when only one person was speaking, i.e. P or P1. If you are unsure who the pronoun is referring to, add [unclear who RA is referring to]. If two people were speaking, P1&P2, always leave the pronouns as they are since we can't know who was meant. If there are manifest mistakes or confusions, you can always add comments in brackets.

- For numbers that are nine or less write out the number (e.g., type "seven" instead of "7"). However, measurements/quantities (e.g. in kg), decimals, equations, house numbers, page numbers, telephone numbers, dates, etc. are always in numerals. Also write "50/50" instead of "fifty-fifty".

- Write out "to" in order to indicate a range, e.g. "12 to 15", not "12-15".

- Retain commonly used abbreviations such as e.g., kg, RWF, etc. even if it was spoken out differently ("for instance" would turn into "e.g.", "kip" would turn into "LAK").

- Spelling of key words used:
  - <u>Kinyarwanda</u>:
    - kuragiza: institutional arrangement for cow-sharing
    - kwisuma: the work of carrying heavy loads on your head, etc.
    - murakoze cyane: thank you
    - nyiragabana: sharecropping
    - ubudehe: welfare categories
    - imihigo: performance contracts
    - umuganda: mandatory community work
    - uruteerane: unclear meaning; possibly sharecropping or land use consolidation programme
    - VUP: public works programme
    - ROSCA: rotating savings and credit association
    - SACCO: saving and credit cooperative organisation
  - <u>English</u>:
    - marshland
    - manure
    - pruning
    - mulching
    - probe and prompt
    - land-use consolidation program
    - cultivate
    - mason
    - receive

- If the interviewer himself/herself speaks in the local language and there is no oral translation, we decided to translate those parts directly into English (it is mostly just greetings, asking names or age and thank yous at the start and the end of some transcripts).

Smoothing

- Transcribe literally; do not summarise or transcribe phonetically (no improvements or embellishments). The sentence form is retained, even if it contains syntactical errors. However, if the meaning of the transcription is incomprehensible because of that or because a word is missing, clarify this in parentheses. Interviews with interpreters:
    - In general, RAs were instructed to translate as literally and acurately as possible and should not paraphrase or summarise participant statements. However, emphasis was put on conceptual equivalence and not on word-by-word translation.
    - RAs were encouraged to take on a more active role, add their own questions as well and to clarify answers with the participants in the local language in order to be sure to grasp the right concepts so that the translation will be correct (sometimes the participant also asks for clarification of the question). RAs were asked to translate significant exchanges as well, especially when they added their own questions. However, if they fail to do so and there is a significant exchange happening without a corresponding translation into English/French, add [RA clarifies without translating] and then just continue with the next English/French sentence, which might often be in the RA, not the P, role.
    - Beyond that, the RA is treated the same as the interviewer regarding smoothing of the transcript. I.e. confirmational interruptions, repetitions, fillers and the like by the RA are not transcribed (even when they are said in English) and there is no need to add [RA clarifies without translating]. It is part of the normal conversation flow in order to make the exchange more natural.
    - The same goes for short exchanges between RA and respondent where the RA usually tries to confirm and fully understand the answer in order to translate the response or clarifies the question (sometimes the respondents might ask back and that was not always translated). This was important to ensure accuracy and a natural conversation flow but it, of course, adds the risk of the respondents being somewhat led in a way that we can't fully follow in the transcript. That is why the RAs were trained in interviewing, were asked to translate their own questions or significant exchanges as well and why we note [RA clarifies without translating] for significant exchanges but it is not possible to do so for every brief exchange or confirmational question.
    - It does not have to be noted if statements made by the participants are not translated as it is hard to know if it was simply a repetition of something that came before, a reaction to an interruption (such as a child) or irrelevant. In any case, these instances are rare. In addition, some parts maybe have been left out by the RA even if they translated others and it would be impossible to mark those.
    - If respondents exceptionally use English/French, add [respondent speaking English/French]. Similarly, if the interviewer exceptionally uses a local language, add [interviewer speaking X].
    - If the interpreter uses a local language key word in the English/French translation, just add for example [Kinyarwanda word].
- Stuttering, stammering and false starts are omitted (unless they add information, in which case you can add… to mark the change in thought). An example of a false start is "I went to the vet-- to the store to buy coffee", simply write: "I went to the store to buy coffee".

- Word repetitions are only captured when they are used as a stylistic device for emphasis: "This is very, very important to me." Never capture more than one repetition, e.g. "This is very, very, very important to me" becomes "This is very, very important to me" when transcribed. Capitalise words that the respondent emphasises strongly in their talk.

- Fillers and hesitation sounds (e.g. "hm, yes, aha, em, like, you know", etc.) are only transcribed if useful and adding meaning to the the phrase, otherwise not. For example, transcribe them if a person finds the question difficult or means yes or no. If that is the case, add a description of the emphasis in parentheses: affirmative, negative, reflective, questioning, sympathetic, etc. Example: "hm [affirmative]".

- Omit interruptions by the interviewer of a confirmational nature. E.g. "uh-huh, I see, yes, I understand, ooo, wow, that's a lot, thank you, I'm sorry, go ahead" etc. or literal repetitions of what was just said (e.g. repeating names to practice pronunciation) unless the interviewer answers a question of the respondent or clarifies a statement.

- If the interviewer repeats individual words spoken by the respondent without adding substance (e.g. names in order to correct the pronunciation), this is not transcribed unless it is deemed relevant for the context.

- Also omit small interruptions, such as greeting bypassers, turning off a ringing phone, etc. unless they seem relevant or disturbing. If the recording has been paused, add [recording paused] and a timestamp.

Noises and non-verbal communication

- Capture the content, i.e. situational context, speech melody, facial expressions, gestures, outside or background noises (e.g. animal sounds, children speaking in background, respondent speaking to children or a phone ringing) etc. can be left out and don't need to be noted unless they are deemed very relevant. The same applies to noises with no meaning (e.g. clearing the throat, coughing).

- Non-verbal utterances that support or clarify a statement (such as laughter or sigh) are noted in parentheses. Interviews with an interpreter:
  - Non-verbal utterances are only noted if it is clear what phrase it refers to (as the interviewer might often not know why and where exactly they laughed) or if it is deemed relevant to the situation. In general, it is not very important to note if the RA was laughing while in the P role but if it seems relevant add [RA laughing] to clarify who was laughing – else the laughter will be assigned to P.
  - Sometimes people don't say yes/no but just "hmm" or express it non-verbally. In such cases, it is ok to just take the words of the RA, even if the participants didn't actually say those words, e.g. "She is saying yes, they have done it".
  - If the interpreter doesn't interpret some part, mark it in a memo. We will relisten to it. If it is clear what is meant, i.e. from the sound (in Rwanda "hmm" means yes) or because we understand enough Kinyarwanda, we will change it directly to the English meaning. This is most often the case for "yes" and "no".

- Don't interpret the non-verbal communication. For example, don't transcribe: My father is funny [nervous laughing].

- Be consistent with how the same behaviour is identified. For example, don't write [laughing] one time and then [laugh] the next time.

- Thought pauses don't have to be indicated unless they are meaningful or exceptionally long. Interviews with an interpreter:
  - Thought pauses are not indicated.

Digression and incomprehensible material

- If a person digresses extremely and speaks of content that does not serve our research questions, put the exact time (from-to) in parentheses and summarise briefly what the person was speaking about in this period.
- Incomprehensible words are indicated as follows: [incomprehensible.]. The reasons don't have to be indicated as they are too varied in the field (phone ringing, animal sound, car passing, etc.). If you assume a certain word but are not sure, put the word in brackets with a question mark, e.g. [Xylomentazoline?].
- Make a note at the corresponding place if the recording has been paused and continued and explain why (e.g. due to a phone call).

Quotations

- If someone indicates that they said something to another person, indicate this with double quotations and use proper punctuation. For example: Then I said to him: "You shouldn't do that" rather than: Then I said to him you shouldn't do that.
- Similarly, do this for when people are indicating they were thinking something, such as: She was thinking: "Do I want to do this or not?". Interviews with interpreters:
  - Do not use quotations when the interpreter is just referring to what the respondent is saying, using the third person for the respondents as the interpeters were instructed to do. E.g. She is saying when it's time, they'll know, rather than: She is saying: "when it's time, they'll know".

Confidentiality and review

- Transcripts need to be fully anonymised. Mark all identifying information (e.g. any names, towns where they live, hospitals that they visit, etc.). in red for me to check case by case. If in doubt, mark too much rather than too little.
- General information that is non-identifying can be left (e.g. if somebody visited Kigali).
- I will use four ways to anonymise the identifying information:
  - If the information is unimportant (or the meaning is clear from the context and the actual name is not needed), I will replace the identifying word with [identity withheld]. The real identity can only be found in the original recording.
  - If the meaning is relevant but not the actual name (or the actual name can be inferred to from the respondent's identity in the interview list), I will explain it in brackets, e.g. [respondent's village or name]. The real identity can only be found in the original recording.
  - If the meaning and the actual name are relevant, e.g. if many people refer to it, I will replace it with a pseudonym in brackets, e.g. [Michel]. The pseudonym's identities can be found in a separate and encrypted document.

- o If the gender would make the person easily identifiable, I will replace the gendered pronoun with "the respondent".
- Always review the transcript by re-listening the tape and reading the transcript at the same time.

Character use

/	word or sentence abort
//	speech overlaps are marked by //. At the start of an interjection, // follows. The simultaneous speech is within // and the person's interjection is in a separate line, also marked by //.
[…]	longer breaks
[laughs]	expression of emotions in parentheses
[phone rings]	events independent of the interview. Note only if this creates an big interruption or is important.
<Toni>	anonymised name
<Tina>	anonymised name
[incomphrensible]	incomprehensible (possibly write justification in parentheses)
CAPITALS	strong emphasis
hm	hm (not: "hhhhm", "mhm", "hmh")
em	em (not: "äm", "ehm", "öhm")
units	tendered, e.g. Euro, meter
percent	%
abbreviations	as spoken (if pronounced fully then, the write fully)
quotes	in quotation marks (and then I said: "Well, let's have a look")
V	single letters are always capitalized
Numbers zero to nine	as words unless it indicates measurements/quantities
Numbers from ten	in numerals
3.5 4 + 5 = 9	decimals and equations are always written in numerals
078 856 00 23	measurements/quantities (e.g. in kg), house numbers, page numbers, telephone numbers, dates, etc. always in numerals
50/50	in numerals instead of words
enumerations with letters	"A we have no time and B we have no money."
sound representation (e.g. speaker makes car noise)	brrummm – if misleading write in parentheses (car noise)

Note-taking guidelines

A substantial number of recordings will not be properly transcribed but only paraphrased. This applies especially to stakeholder interviews:

- Use MAXQDA and the same formatting (including saving "rtf" files). Add description of stakeholders without identifying them.
- Do maintain the Q&A paragraph changes, indicating a timestamp before the English/French part of each question and answer section.
- Answers can be paraphrased (grammar, words, sentence structures, etc. can be changed) and slightly shortened/summarised in neutral note-taking style (use standard English/French but sentences can be incomplete/shortened). As such, the note-taking contains much more interpretation and data reduction than the clean verbatim transcription. It is, however, a very detailed note-taking, and all substantive points have to be retained.
- The grammatical person (he/she said, etc.) doesn't have to be maintained unless deemed relevant.
- If several respondents answer, the answer can be summarised as if it was coming only from one speaker unless the distinction is deemed relevant.
- Note all the key questions asked (not verbatim or including transitions but their main thread). However, introductions, thank yous, follow-up questions, comments and discussions don't have to be noted but their final outcome can be summarised in one answer paragraph (this applies especially when there is confusion or further probing). Similarly, interruptions and non-verbal behaviour don't have be noted, unless it seems relevant.
- RA contributions are only noted if relevant and are summarised. However, key questions asked by the RA are indicated as such. If the RA clarifies without translating, this does not have to be noted.
- Any comments on noteworthy observations that are not part of the answer can be inserted in brackets, i.e.[]. The same goes for the note takers interpretations, i.e. anything that is not contained in the participant's answer itself. Similarly, if an answer is unclear this should be noted as [answer unclear] instead of guessing the meaning and summarising it wrongly – this allows the researcher to go back and listen to it again or to mark it as unclear.
- Very important or revealing statements have to be quoted between quotation marks and in which case everything has to be written in clean verbatim using the rules outlined above as they may be quoted in publications.
- At the end, make sure to note any other comments by the participant in the following way:
  - I: Comments?
  - P: No comments or X,Y,Z

Appendix 7:   Coding Frame for Analysis of Semi-Structured Target Household Interviews in Rwanda

Coding Frame for Analysis of Semi-Structured Target Household Interviews in Rwanda

1 Commodification of production and reproduction
2 Production relations
2.1 Production process
2.1.1 Decision-making
2.1.2 Terracing/Land-use consolidation
2.1.3 Coffee production and price
2.1.4 Non-market exchanges of output
2.1.5 Other aspects of production
2.2 Land/MoP
2.2.1 Access/ownership of land and other MoP
2.2.2 Land scarcity and conflicts
2.3 Work
2.3.1 Livelihood portfolio
2.3.2 Hired labour
2.3.3 Non-market labour exchange
2.3.4 Sharecropping
2.3.5 Kuragiza
2.3.6 Self-employment
2.3.7 Fishing
2.3.8 Migration/sleeping away
3 Trading and finance
3.1 Financial relations
3.2 Output markets and trading
4 Power relations
4.1 Power relations in the realm of production
4.1.1 Relationships between tenants and landlords
4.1.2 Relationships with co-workers
4.1.3 Relationships between employees and superiors
4.2 Collective action and associations
4.3 Relations with the state
4.4 Intra-household or family relations
4.5 Gender relations beyond the household
4.5.1 Relations with/experience of female-headed households
4.5.2 Other gender relations beyond the household
4.6 Other power relations
4.7 Disempowerment or coping
4.8 Agency or coping
5 Miscellaneous
6 Irrelevant

1 Commodification of production and reproduction

Description

This code applies to the *process* of becoming integrated in market exchanges and market creation. It therefore includes a temporal/historical element. It is important to look for indirect links, such as when reproductive work, e.g. own consumption or care, support marketed production. A possible indicator is how road access connected respondents to labour or output markets or the rise of competitive pressures. Commodification of land, labour and output is especially important. The sphere of market exchange/trade/finance is not included here because it is by definition already commodified.

Decision rule

Segments about market participation or the working of markets themselves should go under the respective codes, e.g. labour market aspects under "Hired labour", land market aspects under "Access/ownership of land and other MoP", the same goes for output markets.

2 Production relations

Description

This dimension applies to the technical side of production (the production process) and relations of production and property. Indicators are decisions about the organisation of production (e.g. what to produce) and the access to and use of land and labour. Temporal aspects (e.g. the history of sharecropping or seasonal fluctuations in workers or coffee output) are also captured if they pertain to relations of production. The same goes for comparisons between different arrangements (e.g. among various crop or payment types) and preferences (likes and dislikes). It also includes instances where the state acts in the realm of production.

2.1 Production process

2.1.1 Decision-making

Description
This code applies to decisions regarding planting and output.

2.1.2 Terracing/Land-use consolidation

Description
This code covers agronomic and socio-economic aspects of terracing and land-use consolidation, as well as its advantages and disadvantages. It is not a land reallocation but more about the organisation of production which is why it is not under land/MoP.

2.1.3 Coffee production and price

Description
This code applies to descriptions of and opinions on coffee production. This includes agronomic and socio-economic aspects (e.g. coffee price fluctations), as well as reasons for (not) growing coffee and impact of coffee production.

Decision rule

Inputs specifically in relation to coffee production are coded under "Coffee production and price".

The use of money from selling coffee is usually coded under "Coffee production and price" but can be double coded under "Financial relations" if very relevant.

Work at the coffee washing station should be coded under "hired labour".

2.1.4 Non-market exchanges of output

Description

This code applies to exchanges that do not pass through a market (static dimension). A typical indicator is bartering or bands of solidarity/food sharing and own consumption.

2.1.5 Other aspects of production

Description

This code is a residual category.

2.2 Land/MoP

2.2.1 Access/ownership of land and other MoP

Description

This code applies to access to any means of production including tools, seeds, fertiliser, fishing equipment and various land types (marshland, grazing land, etc). This includes market (e.g. cash renting, sales and purchases) and non-market transactions (e.g. through inheritance or marriage) as well as the process of finding landlords and land registration.

Decision rule

Inputs specifically in relation to coffee production are coded under "Coffee production and price".

The process of finding landlords as well as cash renting are coded under "Access/ownership of land and other MoP".

2.2.2 Land scarcity and conflicts

Description

This codes captures conflicts around land as well as reasons for and effects of land scarcity. What land disputes are often about and how they get resolved is of particular interest.

2.3 Work

Description

Cross-cutting themes like the workload or seasonal fluctuations get coded under the respective type of work.

2.3.1 Livelihood portfolio

Description

This code applies to all the activities and different work engagements they engage it (usually in the introductory part of the interview). It gives an overview of their activities and shows diversity and occupational multiplicity (overall positioning in the relations of production). This includes

comparisons of different work arrangements and reasons for doing them if the focus is on why they do one and not the other. The actual description and experience of each specific production relation will then be coded separately for "Hired labour", "Non-market labour exchange", "Sharecropping", and "Self-employment".

Decision rule

If the focus is on one type of work arrangement alone and not realy on the relation with other worker arrangements, e.g. reasons for (not) labour exchange or preference of being paid in cash or in kind it would be coded under that specific arrangement.

2.3.2 Hired labour

Description

This code captures wage employment (paid in kind or cash), including recruitment, working conditions and pay.

Decision rule

VUP and umuganda will generally be coded as "Irrelevant"

2.3.3 Non-market labour exchange

Description

This code captures the working and experience of labour exchanges.

2.3.4 Sharecropping

Description

This code captures land sharecropping including recruitment of sharecroppers.

Decision rule

The process of finding landlords as well as cash renting are coded under "Access/ownership of land and other MoP".

2.3.5 Kuragiza

Description

This code captures animal sharecropping (kuragiza).

2.3.6 Self-employment

Description

This code captures own-account work (agricultural or otherwise).

Decision rule

Intra-household divison of labour aspects are coded under "Intra-household relations".

2.3.7 Fishing

Description

This code applies to all fishing-related activities - be it self-employed or wage work. Only one of the three villages had lake accsess so the fishing code applies only there.

2.3.8 Migration/sleeping away

Description

This code captures migration as defined than having to sleep away from home. It does not include daily commutes or mobility aspects. Moving places permanently (e.g. after the genocide) is also not coded here unless the focus in on production relations.

3 Trading and finance

Description

This codes applies to the selling and buying of and output as well as to financial relations. This includes trading.

3.1 Financial relations

Description

This code applies to financial market and non-market relations. It includes lending and borrowing of money, debts and remittances transfers. It does not matter whether they are formal (SACCO or bank) or informal relations.

Decision rule

The lending and borrowing of means of production should be coded with "access/ownership of land and other MoP". Lending and borrowing of food with "non-market exchanges of output".
ROSCA's are to be coded under "Financial relations", not agency.
The use of money from selling coffee is usually coded under "Coffee production and price" but can be double coded under "Financial relations" if very relevant.

3.2 Output markets and trading

Description

This codes applies to the selling and buying (unless it is labour or means of production which have their own codes). This includes reasons for selling, seasonal and price fluctuations as well as the buying of food. It includes decisions about what to (not) sell and restaurants, shops and bars.

Decision rule

Aspects of coffee production, especially coffee price fluctations, are to be coded under "coffee production".

4 Power relations

Description

This dimension covers relational aspects of how people engage with others and place themselves in relation to others. Including using favour and clientilism.

4.1 Power relations in the realm of production

Decision rules

This code excludes collective action (e.g. worker groups) and gender which each have their own code.

Decision rule

Acts of resistance or avoidance in the realm of production go to "Power relations in the realm of production", not agency.

4.1.1 Relationships between tenants and landlords

Description

This code applies to sharecropping and rental arrangements.

4.1.2 Relationships with co-workers

Description

This code applies to workers on the same level under any work arrangements (e.g. wage work or labour exchange) except household work which would be coded under "intra-household relations".

4.1.3 Relationships between employees and superiors

Description

This code applies to hierarchical work relationships (i.e. not just to bosses and workers but to workers and their superior/foreman). It includes conflicts and ways of ensuring discipline.

Decision rule

Acts of resistance are coded under "Agency or coping".

4.2 Collective action and associations

Description

This code applies not only to associational structures such as cooperatives and worker groups but also to forms of inter-household collective action (this does not presuppose a shared identity). It includes barriers of entry and reasons for joining.

4.3 Relations with the state

Description

This code only applies to segments where the power of the state itself is the main theme, e.g. how restrictions are felt and judged or how state intervention feels empowering. It is not interested in the functioning of food support programmes, imihigo or VUP per se that goes beyond the argument for this paper which is more interested into the relations of production. Additionally, we can also consult secondary literature that discusses these programmes.

Decision rule

If the focus is on how terracing affects production, it would be coded under "Terracing" but if the emphasis on how there is no choice in following the terracing policy, it would be here.
Relations with the village leaders are coded under "Other power relations".

4.4 Intra-household or family relations

Description

This code applies to relations between members of the same household. Indicators are segments about the division of labour and marriage. It also include polygamous relations.

Decision rule

Issues related to land inheritance are coded under "Access/ownership of land and other MoP"

4.5 Gender relations beyond the household

4.5.1 Relations with/experience of female-headed households

Description

This code applies notably to widowed, separated and divorced women.

4.5.2 Other gender relations beyond the household

Decision rule

Intra-household gender relations are coded under "Intra-household relations". Any other gender aspects, e.g. in the production process, are coded here.

4.6 Other power relations

Description

This code captures power aspects that do not fit under any other code. It includes non-gendered stigmatisation, witchcraft and relations with village leaders.

4.7 Disempowerment or coping

Description

This code applies to general signs and feelings of powerlessness. Specific instances are coded under the respective codes (e.g. "Relations with the state").

4.8 Agency or coping

Description

This code applies to acts of resistance, signs of agency and includes sentiments of empowerment.

Decision rule

Cooperative and associational aspects are coded under "Collective action and associations".
Acts of resistance or avoidance in the realm of production go to "Power relations in the realm of production", not agency.
ROSCA's are to be coded under "Financial relations", not agency.
Hypothetical statements (e.g. what they would do with more money) are coded as "Irrelevant" unless it gives us insights into different production arrangements in which case they would be coded under "Production relations".

5 Miscellaneous

Description

This code should only be used for segments that cannot be coded with anything else *and* are relevant for the argument of the paper - being interesting in itself is not enough.

6 Irrelevant

Description

This code captures anything that is irrelevant to the dimensions of interest and the argument of this paper. This does not mean that it is irrelevant as such or for other papers. This can notably be the case of segments on the standard of living.

Appendix 8:   Research Ethics and Safety Handout

Also available under the following DOI:

Research Ethics and Safety Handout

Author: Patrick Illien

Contents

Introduction

- ➢ This handout outlines a few selected tips and hints regarding research ethics and safety in social science fieldwork.
- ➢ The highlights are a guide to data protection and a short bibliography with relevant literature for further reading. I also note open questions and dilemmas that can arise in the field. The researcher should be aware of and prepare for them but their resolution depends on the local context and might vary (Cramer et al., 2011). Thomson (2009) provides a good synthesis of the various ways researchers dealt with ethical dilemmas.
- ➢ In cases of doubt, always contact your superior.
- ➢ The topic is not of any less relevance in a project on agrarian change. As Cramer et al. (2016, p. 155) write: "all those interested in field research, regardless of the topic, would benefit from engaging with the burgeoning literature on the methodological challenges of research in contexts affected by violence. Because research is not about violence does not mean that physical risks to researchers and research interviewees will not arise from the interaction between research and local political economies".

Data protection

Data protection is crucial to social science research in order to guarantee the confidentiality of our data and the participants' anonymity. It is therefore linked to research ethics and safety. Here are some tips and measures you can take to make sure your data are secure (check out the hyperlinks to learn how it is done):

- ➢ **Passwords**: Obviously, all your devices should be password protected by a safe password (hence not "1234"), for which you can also use a password manager that will help you remember it.

- ➢ **Two-factor authentication**: This adds a second step in addition to your password, for example you may receive a text code when logging into your online accounts from another computer. See here how it is done. In Gmail for example, you can also download a list of ten backup codes to use when you are away from cell coverage (Koopman, 2017).
- ➢ **Internal hard drive**: Make sure you encrypt the internal hard drive of your computer itself (for example, in case your laptop gets stolen). Windows uses "device encryption" and Mac uses "FileVault", which you can activate both in your system settings.
- ➢ **External hard drives**: Also store and share our data on many external drives (from small USB disks to large back-up drives). They should also be encrypted. For this, the drive needs to be formatted in a specific way. Move all your data somewhere else temporarily as reformatting will erase the disk's content! Also inform yourself online about which format to choose since some are not compatible with other operating systems (see here for windows and here for mac).
- ➢ **Storage**:
  - o When in the field upload your pictures and recordings as soon as possible on your encrypted laptop and encrypted drives because most cameras and recorders are not encrypted, which means that all your data can be copied by anybody who steals or finds your devices.
  - o Make sure you have a backup of all your data on two different drives. In that case your data is safe even when your laptop is lost or stolen. Try to use a secure connection to make the transfer, such as a VPN or add browser extensions to increase security. Be aware that many online clouds (such as dropbox) are not secure and should not be used. If you do, add two-factor authentication (see above).
  - o Once your data is backed up on two encrypted drives (e.g. your laptop and your University server), you should not forget to delete them from your camera or recorder as they are unprotected there. Similarly, Koopman (2017) writes: "When your write field notes by hand, snap a photo of them and save the images behind encryption, then destroy your hard paper copy."
- ➢ **Files**:
  - o You can protect files and folders on your windows and mac. This way, you can protect recordings and pictures no matter which format they are.
  - o PDF and Word (windows/mac), Excel (windows/mac) and PowerPoint (windows/mac) documents can very easily be password protected directly. This is especially important if your documents contain lists of interview respondents.
- ➢ **E-mails**:
  - o When sending sensitive data via e-mail you can also encrypt the e-mail itself depending on your software (see here for Outlook). Alternatively, you can use a free third-party solution such as Mailvelope.
  - o Encrypting emails is slightly more complicated since both the sender and the receiver need to be able to decrypt the e-mail. For this reason, it might be easier to put your data in a protected word document and send this while sharing the password via a secure chat.
- ➢ **Messaging**:
  - o The following are free messaging apps that provide secure and encrypted services: Signal, Telegram and Viber. Threema and Wire come at a small cost.
  - o Note that there is an option to self-destruct your messages with a timer. Make sure to enable that function if you need it.

- ➤ **Phones**:
  - o Be wary of phones. Koopman (2017) notes: "You can now record long interviews on most phones. But if you at all suspect that the content of that interview could be misused in any way, by anyone, and particularly by armed actors, use a small digital recorder instead."
  - o In addition, she urges us to "Get away from your phone. Simply turning off your phone is not enough; hackers can still record ambient conversations. A safer bet is to keep the phone outside of the room. (Remember to also take along another timepiece if you usually depend on your phone for that.)"
- ➤ **Further information**: For further tips and a glossary explaining key terms go here. For tips and experiences from an anthropologist professor go here. See also Aldridge, Medina and Ralphs (2010) for guidelines regarding the security of qualitative data.
- ➤ **Open questions/dilemmas**:
  - o What would be a safe online server to upload data to that works with a slow internet connection (VPNs normally require a good internet connection)?
  - o There is a trade-off between picture/sound quality and data protection. While you can and should immediately upload your files on an encrypted device and erase them on the original, they cannot easily be put on a safe server if the file size is too large. This means that you are not likely to transfer your data to the university server. However, if your luggage is stolen, your data is gone. On the other hand, by reducing the size you lower the data quality. MP3 sound formats are generally of good-enough quality and picture sizes might require a lower resolution than you would like.

Do no harm

- ➤ "Scholars who engage in intensive fieldwork have an obligation to protect research subjects and communities from repercussions stemming from that research" (Parkinson & Wood, 2016, p. 22).
- ➤ The do-no-harm principle concerns research participants, assistants as well as the researchers themselves. Make sure to protect your own safety.
- ➤ Hilhorst et al. (2016) provide comprehensive security guidelines for fieldwork in complex and remote areas; see also Mazurana and Gale (2013) for practical tips.
- ➤ In very sensitive research (e.g. on sexual violence) that might prompt respondents to relive trauma, researchers should complete appropriate trainings to deal with respondents' reactions (Cronin-Furman & Lake, 2018; Thomson, 2013).
- ➤ **Open questions/dilemmas**:
  - o Certain topics (e.g. regarding conflict or corruption) might be highly relevant to your research and even to the research integrity as social scientists have to think critically and cannot ignore the historical, socio-economic and political context in which their study is embedded. On the other hand, such topics can be highly sensitive and warrant self-censorship. What can still be asked and defended (and possibly even published) as part of this project and under this research permit without doing harm? This demands knowledge of the local context and discussion with your peers and supervisors (both from a local and an outside perspective).

o   Similar dilemmas arise with abuses and repression witnessed. Ethical principles of do-no-harm might collide with the duty to report and document these as silence might mean to assist the perpetuation of abuse.

Anonymisation

➢   It is essential to anonymise all your data as soon as possible.

➢   This goes beyond replacing names but also taking out other identifiers (e.g. a description of their house or living location). This asks for great care and creativity (Fujii, 2012).

➢   During interviews, some respondents might ask who else you talked to and what they said. The content of other conversations should never be disclosed, and neither should the names of private respondents you talked to as this might put them in jeopardy and violates their anonymity. When it comes to stakeholder representatives (especially NGOs or government agencies), it can be harmless to mention that you talked to them or will talk to them if it is suggested to do so but as a general rule it is always safest to guard their anonymity as well.

➢   **Open questions/dilemmas**:
   o   As visits might be highly visible and authorities might even sometimes tell you who to talk to, it is difficult to safeguard the anonymity of your respondents locally. While there is always a risk of this, you should do the most you can to accommodate the interviewee's wishes and comfort. In addition, you can suggest a private place to meet. This often means going to their home or meeting very early in the morning (Thomson, 2010).
   o   It has been argued that names (and other easy identifiers) of respondents should not be noted in sensitive contexts – neither during the interview, in fieldnotes or transcripts (Thomson, 2010). Is this appropriate and should a research not have the attribution key saved for the project?
   o   Is it appropriate to publish the name of the villages? In some sensitive contexts, researchers anonymised the villages as they are tight communities with strong social control that prevent true anonymity.
   o   Which identifiable characteristics should be deleted? They can easily give away the identity of a participant, especially in conjunction with other information. On the other hand, they can provide important socio-economic information for the interpretation of the data (e.g. number of children or being widowed).
   o   Can outcomes of group discussions with anonymised participants be published? The village will be recognisable and local authorities and villagers may know exactly who participated.

Informed consent

➢   Obtaining informed consent from research participant is a basic principal of ethical research. See here for tips and a practical discussion.

➢   Nevertheless, this can be difficult in certain contexts (Fujii, 2012), especially when participants are urged to do participate by local authorities.

➢   At the very least, the researcher should make sure to not pressure respondents in participating and actively appease them that there is no problem in withholding participation. The authorities should not be informed of the respondent's decision.

- Further, if indirect signs (verbal or non-verbal) of disapproval are shown, the researcher should also have the courage to stop the interview if appropriate.
- Even if informed consent has been granted, the researcher has the responsibility to ensure the safety of the participants in the long term following the do-no-harm principle and might self-censor certain data if deemed too sensitive (Parkinson & Wood, 2016).
- Throughout, participants should be reminded that they can withdraw the consent at any time or for specific questions. Ideally, one should ask again for consent towards the end of the research period when multiple interviews are undertaken (Thomson, 2009).
- Crucially, participants should be clearly informed, amongst others, of the nature of the project, the confidentiality/anonymity granted, compensation (or lack thereof) provided and eventual use of the data. Researchers should also mention that while anonymised, responses themselves can be quoted and published.
- In addition, Thomson (2010) noted that it can be useful to demonstrate the recorder so that respondents understand that there will be a permanent record of the conversation (some might not know how it works).
- Consent can be given by signing a written consent form or orally. In any case, it should be explained orally before each interview.
- While written consent forms can underlie the issue even more, this might not be appropriate for qualitative research, especially in sensitive contexts as both the respondent and the researcher will need to keep a copy – thus jeopardising the anonymity of the participant in the long term.
- **Open questions/dilemmas**:
  - In many cases, respondents hope to get some material benefit from participation even if that has been repeatedly declined (Cronin-Furman & Lake, 2018). This somewhat limits free consent in a context of high inequality.
  - In addition, compensation itself is an ethical question and should be clarified at the outset. In social science research, this is very often somewhat attenuated by providing a small non-monetary token of appreciation like soap or food.
  - It has been suggested to outline possible risks in the consent form. However, what does this mean in sensitive context where sanctions might be levied and how does this bias the responses?
  - Is it still ethical to cite somebody from field notes, if they want to say something without the recording but don't explicitly withdraw consent? Of course, it would be best to ask right then but what if you forget? At the very least it should be noted in the field nots so that later you still know to which comment it applies
  - What about informal conversations where people might not be aware that the researcher compiles notes afterwards? This is an important part of ethnographic and observational research, but the consent issue is debatable.
  - During group discussions some participants are too early and some very late – when is a good time to start? While new arrivals should be briefly informed of the recording and the anonymity granted, do they also have to be informed about the project, compensation, use of data etc. again (which will take time and interrupt the flow)? And what about uninvited bystanders who show up, speak, but might not know that they are being recorded?

Research assistants

➢ The role of research assistants and translators is often crucial in fieldwork (especially for outsiders) but rarely discussed and acknowledged (see for example Deane and Stevano, 2016, and Middleton and Cons, 2014).

➢ This demands fair pay and acknowledgement (see guiding questions below).

➢ On the other hand, it can be advisable to withhold the names of the research assistant in cases of sensitive research in order to protect them from any possible repercussions stemming from the publications. In this case, it is probably best to discuss this issue directly with the persons involved and possibly with your superiors.

➢ Further, the expectations, working conditions and legal framework in the relationship between researchers and research assistants is often poorly specified. It is therefore advisable to sign a contract or memorandum of understanding with the research assistant, outlining inter alia pay, tasks (e.g. with or without transcription), confidentiality requirements and data ownership issues. The following templates provide useful examples: University of Augsburg and Stanford University.

➢ **Open questions/dilemmas**:
  - Working hours and conditions during fieldwork are highly flexible and unregulated. This can lead to dissatisfaction. It is best for both sides to outline their expectations at the start and to establish some ground rules for joint respect (e.g. regarding privacy, off-duty hours etc.).
  - Research assistants might be put into a difficult situation regarding sensitive data and when pressured might also feel the need to give up some data (Leegwater, 2015). Trust is key as well as an open discussion regarding sensitive issues and the clear understanding that the assistant bears no responsibility regarding the data.
  - The do-no-harm principle is especially relevant in relation to research assistants as they might be put in danger as a result of the research (even when the research has left the country). The same dilemma regarding research integrity and self-censorship applies.

Guiding questions

The following guiding questions summarise the most important ethics and safety issues that you have to account for. It is important to ask yourself these questions when doing fieldwork. They guide is taken from Cronin-Furman and Lake (2018, p. 612, table 1). Goodhand (2000) also outlines key points to do no harm.

Before heading to the field
➢ Have you done your homework? How well do you understand the political context you'll be working in? Have you reached out to others who have worked in your research site to ask about the ethical challenges they faced? How would you handle the challenges they faced if you encountered them in your own work?

➢ If your research involves vulnerable human subjects, have you thought through how necessary their firsthand testimony is for your research design? And if others have worked on similar questions, are you confident that your project adds something valuable to offset the potential harm?

➢ Who will you reach out to if you need to discuss ethical issues that arise during your fieldwork? What will you do if you feel your research is endangering someone in ways that you didn't

anticipate? What ethics issues are you concerned about that were not raised in your human-subjects review? How will you deal with these?

➢ Have you decided how you will handle requests for financial or other assistance from research subjects? What types of researcher–subject relationships are you comfortable with? How will you weigh your perceived objectivity as a researcher against your ability to provide sometimes life-saving support to someone in need? Are you comfortable with the data security measures that are necessary for your project? Have you created a data security and backup plan?

In the field

➢ Would all of the practices you are employing be considered ethical in your home country?

➢ Would you be comfortable with someone treating you or your loved ones the way you are interacting with your research subjects and partners?

➢ Are you confident that you're really getting informed consent from your participants? Have you encountered difficulties in explaining your project or your role to your research subjects? Do you need to rethink your description of your project to ensure that participants understand the information they are getting about who you are and what your research is for?

➢ Have any of your research participants asked you for medical, material, or professional assistance? Do you think these requests influenced their willingness to talk to you? Does this alter your recruitment strategy in the future or how you approach research participants going forward? Should it affect how you interpret your data?

➢ If you are working with a partner organization, are you aware of how (and what) they are communicating with research participants about your project? Do staff members appear to be more attentive to meeting your research needs than they are to the well-being of research subjects?

➢ If you are employing local staff, what factors did you consider when negotiating a rate? What are your research assistants and collaborators contributing to the project? If a colleague at your home institution were performing this role, would they deserve an author credit? If not, how else can you appropriately and adequately compensate your local colleagues' time and labor?

After coming home

➢ Have you ensured that your research subjects and partners are comfortable with the ways in which they are attributed and acknowledged in your work? Have you given credit where credit is due? And have you thought beyond the requirements of your IRB to consider whether additional confidentiality measures might be necessary? For example, where appropriate, have you removed dates and place names, as well as other identifiers, to ensure that individuals cannot be linked to a particular interview or sentiment?

➢ Have you made a plan to ensure that your research results are disseminated back to the affected community in ways that are meaningful or valuable to them? What would a valuable dissemination strategy look like in the context in which you are working?

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The following literature provides a very useful overview of research ethics and safety when doing social science research, especially in sensitive contexts. Some of it has been referenced above. For an excellent literature review see (Campbell, 2017).

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Appendix 9:   Declaration of Consent

<u>Declaration of consent</u>

on the basis of Article 18 of the PromR Phil.-nat. 19

Name/First Name: Illien Patrick

Registration Number: 09-344-797

Study program: Geography and Sustainable Development

Bachelor ☐   Master ☐   Dissertation ☑

Title of the thesis: The Bittersweet Taste of "Miracle Growth": A political economy analysis of poverty, labour, and economic growth in the coffee heartlands of Laos and Rwanda

Supervisor: Prof. Dr. Peter Messerli and Co-supervisor Dr. Sabin Bieri

I declare herewith that this thesis is my own work and that I have not used any sources other than those stated. I have indicated the adoption of quotations as well as thoughts taken from other authors as such in the thesis. I am aware that the Senate pursuant to Article 36 paragraph 1 litera r of the University Act of September 5th, 1996 and Article 69 of the University Statute of June 7th, 2011 is authorized to revoke the doctoral degree awarded on the basis of this thesis.

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Place/Date

Signature

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