MASTER THESIS

THE POWER OF FINANCIAL INCLUSION

A study on the contribution of financial inclusion to rural development and to achieving UN Sustainable Development Goals, in emerging and developing economies

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Date: October 30th, 2020

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Summary

Contemporary poverty is strikingly concentrated in rural areas of emerging and developing economies. Therefore, to achieve the implementation of UN Sustainable development goals, there seems to be a pressing need for rural development in emerging and developing economies. In previously published literature, the role of financial inclusion regarding economic growth is discussed and questioned: there is uncertainty on whether economic growth improves the poor population's livelihoods. But, up till now, no research has been performed concerning the likeliness that financial inclusion is a tool to improve rural standards of living emerging and developing economies. The latter leaves a knowledge gap this thesis focusses on by answering the main research question: 'How can financial inclusion be used as a tool to contribute to rural development and to achieving the UN Sustainable Development Goals?' In this thesis, the definition of rural development is evolved around rural people's ability to meet basic needs. To answer the main research question, this thesis is structured as a cross-sectional study, using secondary quantitative data. Also, this thesis developed a theoretical framework describing how financial inclusion theoretically would create outputs and outcomes, which in turn lead to rural development. To test whether the framework matches reality, simple linear regression are performed. Also, correlations are used as a technique to analyze the relationship between variables. The most important findings regarding financial inclusion's contribution to rural development are: 1) financial inclusion and economic growth develop simultaneously while contributing to each other, 2) economic growth is strongly related to rural development, and 3) employment plays no role in financial inclusion's contribution to rural development. Furthermore, financial inclusion contributes to the SDGs via increasing access to financial services (amongst women) and financial inclusion's contribution to economic growth and decreasing the employment gender gap. This resulted in financial inclusion contributing to SDG 1, SDG 5, SDG 8 and SDG 10. When applied as a tool to advance rural development, this thesis argues that financial inclusion must always and only contribute to sustainable development for non-sustainable development cannot be called real rural development. The SDG framework has shown to be a suitable framework to guide organizations through sustainable development while preventing the achievement of particular sustainability goals at the expense of other sustainability goals. Lastly, the main weakness of this research is that this study depends on secondary data. A great strength of this study is it was able to explore the relationship between financial inclusion and rural development – in emerging and developing countries – which has not been done before, by using quantitative data on several countries. Through the usage of quantitative data of several countries, this thesis applied a descriptive approach to explore financial inclusions' contribution to rural development and to provide the foundation for further research.

Preface and acknowledgements

It was the summer of 2013 when I first entered the campus of the University of Twente (UT) as an official student. From day one, I had a great time, meeting many sound people. People I cannot imagine them not being in my life anymore. As a bachelor student in health sciences, I got familiar with the sincerely involved staff the UT is known for. Up till this day, I appreciate the people-minded approach I experienced. An internship in a township in South Africa fully fueled my international interests. A logical step for me followed: the European Studies master programme. Often, I have explained what – according to me – this study is about: "It's basically a master on how the world works." I learned about the background of everything we see in the news, from tensions in the Persian gulf to climate activists and from conservatism in Hungary to the role of institutions like the World Trade Organization. To a great extent, the broad focus wouldn't have been possible if it wasn't for the (second) master program on Political Science in Münster, Germany.

I am thankful for the freedom we as students got to learn more about the topics we personally found fascinating. In the start of 2020, I gladly used the extent of freedom both masters offered, this time to find a master assignment close to my personal interests. I am thankful to have found this at Rabo Partnerships, a department where a focus on local farmers and an international approach meet. From the start, I enjoyed being part of this corporate organization while maintaining a European Studies and Political Science mindset.

Let me finish by thanking my first supervisor, dr. Veronica Junjan, for great engagement in the topic and in the process of writing this master thesis. Of course, I'd also like to thank dr. Ulrich Hamenstädt for being my second supervisor and providing feedback which helped me taking this thesis to a higher academic level. Last but not least, I want to thank my external supervisors Lenneke Hensing and Simon Boddeüs for providing me with the opportunity to be part of Rabo Partnerships and for the discussions we had on how to design this study so that its results can be used in practice.

I very much hope you will enjoy reading my thesis.

Best wishes,

Anne-Lot Kemna

Enschede, October 30th, 2020

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List of abbreviations

ACLED	Armed Conflict Location & Event Data Project
CSR	Corporate Social Responsibility
FAO	Food and Agriculture Organization of the United Nations
FSP	Financial Service Provider
GDP	Gross Domestic Product
HDI	Human Development Index
IMF	International Monetary Fund
IVC	Impact Value Chain
pc	Per Capita
PPP	Purchasing Power Parity
SDG	United Nations Sustainable Development Goal
Sig.	Significance
UN	United Nations
WCARRD	World Conference on Agrarian Reform and Rural Development

1. Introduction

In 2015, as a successor of the Millennium Goals, seventeen UN Sustainable Development Goals (SDGs) have been adopted by all United Nations Member States (United Nations, 2020c). The member states committed themselves to work towards the full implementation of the SDGs by the year 2030 (United Nations, 2015). The SDGs provide a "shared blueprint for peace and prosperity for people and the planet, now and into the future" (United Nations, 2020c). The SDGs concern a wide variety of topics, ranging from addressing people's basic needs such as education and nutrition to preserving ecosystems below water and on land. Over the years, the SDGs have become broadly respected and implemented globally, uniting the world to thrive for sustainable and equal development (Ali et al., 2018; Jiménez-Aceituno, Peterson, Norström, Wong, & Downing, 2019; Vaggi, 2018). Much of the international discussion in the formation of the SDGs concentrated on the pressing needs of developing countries in achieving the goals, in order to allow fundamental development (Osborn, Cutter, & Ullah, 2015). Developing countries – from here onwards: 'emerging and developing economies'[1] – are nations "transitioning from a low income, less developed, often pre-industrial economy towards a modern, industrial economy with a higher standard of living." (Chappelow & Scott, 2020). In emerging and developing economies, many people find themselves unable to meet their basic needs and generated wealth is often unequally divided (Davies, Lluberas, & Shorrocks, 2016; Murphy, 2017). That poverty especially hits rural areas is presented by the 2015 estimate saying 79% of the global extreme poor live in rural areas (Suttie, 2019, p. 1). In addition, the world's population reached 7.7 billion in 2019 and the number of mouths to feed is expected to reach 8.5 billion in 2030 (United Nations, 2019b, p. 5). By nature, most agricultural activities take place in rural areas and are subject to climate change (Parker L, Bourgoin C, Martinez-Valle A, & P, 2019). To tackle extreme poverty, allow people to meet basic needs and to strive for implementation of all SDGs by 2030, there seems to be a pressing need for rural development in emerging and developing economies.

In light of tackling extreme poverty, there is an ongoing debate on how broad economic growth can be accelerated, expecting this will increase incomes of poor people in emerging and developing economies and enable them to better meet their basic needs (Khan, 2011; Madar, 2017; Porter & Kramer, 2011). As an expected facilitator of economic growth, scholars discuss the contribution of accessibility, availability and usage of official financial products and services – in brief: financial inclusion – to improve living conditions (Babajide, Adegboye, & Omankhanlen, 2015; Khan, 2011; Madar, 2017; Sahay et al., 2015). Financial inclusion, by providing safe and efficient money

[1] By using the term 'emerging and developing economies' this thesis takes an example of IMF's Country Composition of WEO Groups (IMF, 2020)

management (Madar, 2017, p. 478; Sarma & Pais, 2010, p. 613), is expected to increase economic activities and employment. Consequently, financial inclusion is expected to cause economic growth, higher disposable incomes, and thus allow people on low incomes to improve their standards of living (Khan, 2011, p. 2). Although there is evidence of a positive correlation between financial inclusion and economic growth (Babajide et al., 2015; Kim, Yu, & Hassan, 2017), there is a lack of evidence on whether the poor population directly benefits from financial inclusion (Madar, 2017). Furthermore, limited research has been conducted concerning the impact of financial inclusion in the specific context of rural areas in emerging and developing economies. This results in the knowledge gap which this thesis addresses: it is unclear whether financial inclusion in rural areas of emerging and developing economies is a tool to improve rural standards of living.

The academic puzzle underlying the knowledge gap concerns what it would mean when financial inclusion indeed contributes to rural development in emerging and developing economies. What does this mean for financial services providers (FSP) operating in emerging and developing economies? Are they likely to play an important role in boosting rural development by increasing financial inclusion? And if so, do they bear corporate social responsibility to provide financial inclusion to people currently excluded from the financial system, even though – or especially when – they live in remote rural areas? Possibly, when the contribution of financial inclusion to rural development is clarified, this is a game-changer on how FSPs perceive their responsibility for rural development and achieving the SDGs.

Present-day, there are several types of FSPs active. Of course, there are traditional banks, offering a physical presence with branches located across countries (Orlando, 2020) and considering loans and other earning assets as the main outputs (Lozano-Vivas & Pasiouras, 2010). Furthermore, microfinance once started with micro-lending to bring loans within the reach of poor household not served by traditional banks . This focus has further developed towards other financial services such as savings and insurance (Newman, Schwarz, & Ahlstrom, 2017). Additionally, in the contemporary digital environment Fintech companies have been playing an increasing role in shaping banking and financial landscapes, penetrating areas that may be underserved by traditional banks (Jagtiani & Lemieux, 2018). In this thesis, literature on all types of FSPs has been analyzed to find a theoretical basis for the expected social impact of accessibility, availability and usage of financial services.

To clarify the contribution of financial inclusion to rural development and the SDGs, this research is conducted along the lines of two main objectives:

1) This research aims to gain greater insight into whether and how financial inclusion contributes to rural development in emerging and developing economies.

2) This research aims to examine to what extent increasing financial inclusion and its direct and indirect effects (in rural areas of emerging and developing economies) contribute to sustainable development as described by the SDGs.

By the latter, the thesis could provide tools to FSPs regarding operationalization and monitoring of SDGs. To achieve the objectives of this research, one descriptive main research question and two descriptive sub-questions are formulated:

Main research question: How can financial inclusion be used as a tool to contribute to rural development and to achieving the UN Sustainable Development Goals?

Sub-question 1: To what extent does financial inclusion in rural areas, in selected cases of emerging and developing economies, contribute to rural development?

Sub-question 2: To what extent does financial inclusion directly or indirectly contribute to Sustainable Development Goals in selected cases of emerging and developing economies?

To answer the research questions, this thesis is structured as a cross-sectional study, using secondary quantitative data and applying correlations as a tool to analyze the data. To answer sub-question 1, this means variables are identified based on a literature review and indicators are selected based on available data. Following a theoretical model on how financial inclusion (though outputs and outcomes) contribute to rural development, data is subsequently analyzed using simple linear regressions. In these regressions, each case included is either a country in a specific year (CountryYear) or a country in combination with the difference in a timespan of three years (CountryDifference). This means emerging and developing economies are not analyzed over some time, but the relationship between indicators is analyzed for all cases at once via correlations. Emerging and developing economies are selected based on the International Monetary Fund (IMF) list of emerging and developing economies (IMF, 2020) and their political stability and absence of violence/terrorism (the World Bank, 2020e). In addition, when data on the national level is used to conclude on rural areas, only countries with a rural population of at least 60% are included. Lastly, in answering sub-question 1, the data analysis is divided into three parts: part 1 uses national data on all identified indicators, part 2 uses data on the rural population on only the indicators of which rural data is available while including a great number of countries, and part 3 uses national data on the female populations which is beneficial since in this thesis rural development is partly devoted to the female position. Building on

the results of sub-question 1, sub-question 2 compares financial inclusion and it's (in)direct effects as studied with the official definitions of the SDGs (United Nations, 2019a). By doing so, financial inclusions and its effects are linked to the SDGs.

As for the scientific relevance, firstly, this thesis adds to the current scientific literature via focusing on rural development a specific setting, namely emerging and developing economies. This thesis acknowledges that many studies have been dedicated to how financial inclusion and economic growth are connected. However, academics still do not agree on whether this helps the (rural) poor population to improve their living conditions. Secondly, research on the effects of financial inclusion mostly concerns case studies. Very few studies use quantitative data of various countries, while this allows an interesting perspective to analyze the effects of financial inclusion. Thirdly and lastly, scientific relevance is found in the contribution to the academic literature on how SDGs can be pursued by FSPs. While the implementation of SDGs is increasingly discussed by scholars (Nhamo & Mjimba, 2020; Vaggi, 2018; Zhelezov, 2015), to date no studies have focused on how SDGs can be pursued by FSPs in rural areas of emerging and developing economies.

The societal relevance of this research is twofold. Firstly, poverty is strikingly concentrated in rural areas of emerging and developing countries (Suttie, 2019, p. 1). Without rural living conditions being improved, rural people will continue to seek a living in urban areas (the World Bank, 2020a), while urbanization is more likely to increase than to decrease global poverty (Imai, Gaiha, & Garbero, 2017). On the contrary, an increase in the population share working in rural sectors (in agriculture and non-agriculture) is often associated with poverty reduction (Imai et al., 2017, p. 963). Therefore, in reducing global poverty, rural development is highly important (Imai et al., 2017). Secondly, often institutions experience challenges and barriers in operationalizing and monitoring the SDGs (Gusmão Caiado, Leal Filho, Quelhas, Luiz de Mattos Nascimento, & Ávila, 2018). This thesis provides an example of how organizations can operationalize and monitor their contributions to SDGs in a structured manner. It also provides insights to FSPs in emerging and developing countries on where to focus on when operationalizing contributions to SDGs.

Lastly, this thesis classifies as a thesis for the programs on European Studies and Political Science for the following reasons. First, both programs approach the SDGs as a framework for international sustainable development. This thesis is an example of how international organizations – trough international cooperation which lead to the SDG framework – do have the power to guide companies to a more sustainable and responsible way of working globally. Related to this, is the concept of Corporate Social Responsibility (CSR), a form of responsibility broadly discussed in Political Science. CSR describes a company is socially accountable to itself, its stakeholders, and the public (Chen, 2020;

Keinert, 2008, p. 38). Describing how FSPs can bear responsibility for achieving the SDGs is a great example of how FSPs can apply contemporary CSR. Lastly, this thesis can be interpreted in line with International Relations trends to understand it's broader political perspective. As CSR was previously approached with a classical liberalism point of view, companies performed their CSR without economic intervention such as regulation and subsidies (Heilbroner, 2020). Resulting from of a strong globalist transition of responsibilities and tasks from governments to companies, there is a need for a basic structure to allow collective responsibility work going beyond (unsustainable) economic rationality (Mäkinen & Kourula, 2012). In respect to the SDGs, this thesis is an example of how the SDGs can provide such a basic structure to allow collective responsibility work.

The structure of this thesis is as follows. Chapter 2 presents the literature review on the concepts of financial inclusion and rural development and the impact model used to describe the interdependency. Chapter 3 contains the research methods, which includes the research design, case selection, data collection method, operationalization and data analysis method. Next, chapter 4 describes the data analysis and is divided into three parts: part 1 which analyzes national data, part 2 which analyzes data on the rural population specifically, and part 3 which analyzes data on the female population. Chapter 5 presents the answers to the sub-questions. Then, chapter 6 contains the conclusion and discussion by answering the main research question, discussing the strengths and weaknesses of this research and providing recommendations for further research.

2. Literature review

This chapter reviews current literature to create a theoretical framework on how financial inclusion (theoretically) contributes to rural development. In answering the research questions, this thesis builds upon this theoretical framework since the framework provides the foundation for selecting the variables which are measured. In other words, it conceptualizes what is to be measured to answer the research questions.

2.1 The concept of contribution

In conceptualizing contribution, this thesis builds on a theory on impact measurement. Although this thesis does not aim to find causal relationships, theories on impact measurement help creating a narrative on how financial inclusion could contribute to rural development.

Defining a narrative is important since "[t]he exercise of defining the narrative helps to establish the results and indicators that should be monitored to show the compliance of the objective" (Derbez, 2019, p. 167). The theory used to define a narrative on how financial inclusion theoretically contributes to rural development is the Impact Value Chain (IVC) by Clark, Rosenzweig, Long, and Olsen (2004). The IVC describes how a venture via inputs and activities create outputs and successively outcomes: changes in the social system (Figure 1). Clark et al. (2004, pp. 6-7): "The key notion of the Impact Value Chain is to differentiate outputs from outcomes. Outputs are results that [one] can measure or assess directly. (…) Outcomes are the ultimate changes that one is trying to make in the world." Furthermore, goal alignment is explained as an evaluation of whether outcomes or impacts met desired goals (Clark et al., 2004, p. 14). According to Clark et al. (2004, p. 7), the impact created by a venture in changes to the social system minus what would have happened anyway (Figure 1). In social sciences, one needs a 'counterfactual' to examine what changes to the social system would have happened anyway, without the venture performing its activities. When applied, a counterfactual must be a region which has the exact same conditions as the region the venture operates in, but without the ventures present or similar activities being performed (Clark et al., 2004, p. 7).

Applying the IVC to this thesis means the IVC is interpret slightly different than explained by Clark et al. (2004). Firstly, this thesis does not investigates any venture but financial inclusion. Therefore, inputs into the venture are not relevant for this thesis and 'Activities' will refer to increased financial inclusion. Secondly, since the contribution to rural development is researched, 'Goal alignment' will refer to rural development. Lastly, Clark et al. (2004) explain a counterfactual is required to identify changes to the social system which would have happened anyway. Depending on the research design, this thesis is not able to identify such a counterfactual. Another method to imply whether a development depends upon the level of financial inclusion is therefore required.

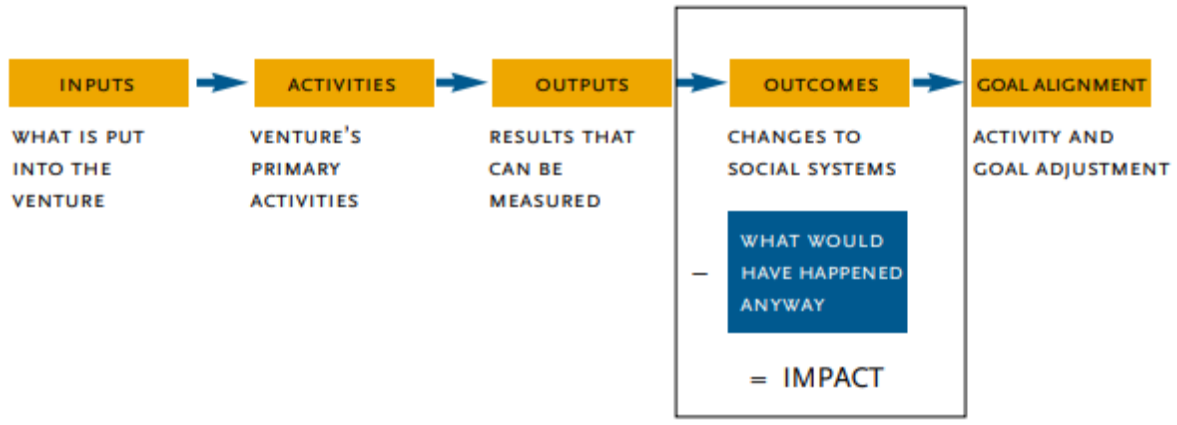

Figure 1. Impact Value Chain (Clark et al., 2004)

Applying the IVC to this thesis contributes to the strength of this thesis in two ways. Firstly, the IVC allows a clear distinction between outputs and outcomes. This is beneficial since outputs are relatively straight-forward to measure and therefore, information on outputs is already well available. The knowledge gap, however, pertains to whether financial inclusion in rural areas of emerging and developing economies is a tool to improve rural standards of living, and thus accomplish changes in the social system (outcomes). Secondly, the IVC contributes to defining a narrative which helps to define indicators and structure the results of the thesis (Derbez, 2019).

2.2 Research on financial inclusion

Previous paragraph introduced the IVC as theory used to provide a narrative on how financial inclusion contributes to rural development. To finalize the narrative, this paragraph defines financial inclusion and identifies its theoretical outputs and outcomes.

2.2.1 Defining financial inclusion

One of the early definitions of financial 'exclusion' defines financial exclusion as processes that serve to prevent individuals and certain social groups from gaining access to the formal financial system (Leyshon, 1995). The literature describes two methods of deciding the level of access to the formal financial system: 1) via 'dimensions of financial inclusion' (Sarma, 2008), 2) via 'degrees of financial inclusion' (Arun & Kamath, 2015). The three dimensions of Sarma (2008) are accessibility, availability and usage of financial services. The dimension's indicators are based on traditional banking:

1) accessibility is measured by the number of bank accounts per 1000 people (Sarma, 2008),
2) availability has been measured by the number of bank branches and the number of ATMs per million people (Sarma, 2008), and
3) the proxy for the usage dimension is the volume of credit plus deposits, relative to the GDP (Sarma & Pais, 2010, pp. 615-616).

Regarding the usage of financial services, mobile money accounts can provide an important boost for financial inclusion, especially in some fragile states and conflict- or crisis-affected economies in which overall account ownership is low. For instance, in conflict affected economies in Sub-Saharan Africa more than 40 percent of account owners have a mobile money account (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018, p. 22). Also, Demirguc-Kunt et al. (2018) stressed the importance of taking into account the usage of financial services among women because women are significantly underbanked. Based on 2017 data, globally 72% of all men and 65% of all women own a bank account. This means there is a global gender gap in usage of financial services of 7%.

Degrees of financial inclusion focus on the degree of adoption and usage of different financial products (Arun & Kamath, 2015). The more benefit derived from a product, the more value that financial product has. The main financial products are the following, in order of level of sophistication: 1) owning a secure transactional account, 2) electronic payments, 3) loans, 4) long-term savings and investments, and 5) insurance (Arun & Kamath, 2015).

Table 1. Summary of methods to measure financial inclusion

Method to measure financial inclusion	**Variable**	**Indicator**
Dimensions of financial inclusion	Accessibility of financial services	Number of bank accounts per 1000 people
	Availability of financial services	Number of bank branches per million people
		Number of ATMs per million people
	Usage of financial services	Volume of credit plus deposits, relative to the GDP
Degrees of financial inclusion	Adoption and usage of different financial products	Number of people owning a secure transactional account
		Number of people performing electronic payments
		Number of people attracting loans
		Number of people obtaining long-term savings
		Number of people making investments
		Number of people having insurance

The introduced literature above is reviewed to define the concept of financial inclusion in this thesis. Firstly, the definition by Leyshon (1995) sketches the very basics of financial inclusion, namely ‘access to the formal financial system’ and the inclusion of all individuals and social groups. Additionally, the three dimensions of financial inclusion (accessibility, availability and usage of financial services) defined by Sarma (2008) provide a straight-forward indication of what access to the formal financial

system comprises. Furthermore, degrees of financial inclusion describe the value of the usage of financial services. It can thus be considered to be part of the dimension 'usage of financial services'. Based on the above, this thesis defines financial inclusion as *access, availability and usage of financial products and services for all social groups in society*.

2.2.2 Outputs and outcomes of financial inclusion

Following the structure provided by the IVC, this section continues with identifying theoretical outputs of financial inclusion. Outputs refer to direct results that can be measured (Clark et al., 2004). Sarma and Pais (2010, p. 613) stated the two main outputs of an inclusive financial system are 'increased efficiency' and 'increased safety'.

In this context, increased efficiency refers to the efficient allocation of financial resources (Sarma & Pais, 2010, p. 613). Outputs regarding increased efficiency include reduced cost of capital (Sarma & Pais, 2010, p. 614) and governments providing subsidies directly to the beneficiary accounts (Khan, 2011; Muralidhar, Bossen, & O'Neill, 2019). Efficient allocation of resources is likely to increase individual (traditional) bank stability as well (Ahamed & Mallick, 2017, p. 403), for instance since it leads to lower marginal costs of producing financial services (Ahamed & Mallick, 2017, p. 405). Lower marginal cost, in turn, might lead to greater pricing power for banks which makes them more stable (Ahamed & Mallick, 2017, p. 423). Besides, bank stability can be improved by financial inclusion in general since an inclusive financial system reaches out to more customers, and thus allows a bank to attract a higher amount of inexpensive retail deposits (Ahamed & Mallick, 2017, p. 404; Demirgüç-Kunt & Huizinga, 2010).

The second main output of financial inclusion is increased safety through the usage of formal financial services, instead of informal services. Among other things, this refers to the use of formal sources of credit (Sarma & Pais, 2010, p. 613). Adequate access to formal financial services makes it easier to obtain credit from FSPs (Muralidhar et al., 2019, p. 516). Successively, this reduces the growth of usage of informal sources of credit – such as informal money lenders – which are often found to be exploitative (Sarma & Pais, 2010, p. 613). Furthermore, safely storing money in an account with an FSP allows people to accumulate savings and lower their demand for loans, while loans come with debt repayment and (costly) interest. Hence, safely storing money in an account contributes to personal welfare (Muralidhar et al., 2019, p. 516). Lastly, financial inclusion increases safety since it allows governments to transfer subsidies directly to beneficiary accounts. This drastically reduces leakages and theft in social welfare schemes (Khan, 2011, p. 3). Table 2 summarizes the theoretical outputs of financial inclusion.

In addition, outcomes refer to changes to the social system (Clark et al., 2004). Reviewed literature argues financial inclusion is increasingly seen not just as a result of economic growth, but as the driver of economic growth (Babajide et al., 2015; Khan, 2011; Kim et al., 2017). This is explained by financial inclusion increasing economic activities and employment, both acting as a multiplier for the economy. In turn, higher disposable incomes are available and the poor and disadvantages are empowered to uplift financial conditions and improve their standards of living (Khan, 2011). In addition, financial inclusion could improve standards of living because accumulating savings and obtaining credit is facilitated. Therefore, greater funds are available to perform key home improvements, such as adding kitchens and bathrooms, or purchasing expensive but time-saving durables (Azevedo, Figal Garone, Maffioli, & Olarte, 2019). Though, whether financial inclusion causes improvement in the poor population's living conditions is still up for debate. Madar (2017, p. 478) states "the assumption of poor people benefiting directly from financial inclusion is weak; the impact literature cannot show transformative or even clearly positive effects". Please see table 2 for the summary of outcomes of financial inclusion.

Table 2. Summary of theoretical outputs and outcomes of financial inclusion

Outputs of financial inclusion	**Outputs through increased efficiency**
	Reduced cost of capital
	Government providing subsidies directly to the beneficiary FSP accounts
	Greater individual bank stability - Reduced marginal cost of producing output - Greater pricing power of banks - Inexpensive retail deposits for banks
	Outputs through increased safety
	Easier to obtain credit
	Reduced growth of informal sources of credit
	More savings accumulated in a an FSP account
	Reduce leakages and theft in social welfare schemes
Outcomes of financial inclusion	Economic growth
	Increased economic activities
	Increased employment
	Higher disposable incomes
	Improved standards of living

2.3 The concept of rural development

The previous paragraph defined financial inclusion and identified its theoretical outputs and outcomes. To finalize the IVC in the context of this thesis, the next step is to address what the IVC calls goal alignment: rural development. This paragraph defines rural development and explains how it should be interpreted.

To formulate a definition of rural development, first 'rural areas' and 'development' are reviewed separately. There is no single definition of rurality as states differ in the characteristics that distinguish urban from rural areas (FAO, 2018; United Nations, 2017). Therefore, in defining rurality, many hold on to the definition similar to Dax (1996): "[in] public discussion of regional development the term rural area is generally used as an expression for non-urban or peripheral regions" (FAO, 2018, p. 14). This thesis does so as well, meaning in this thesis rural areas are defined as *areas that are not urban.* Moreover, 'development' in the context of society is a set of desirable societal objects which society seeks to achieve (Singh, 1999, p. 20). Building on this explanation of development, rural development is a set of desirable societal objectives that rural society seeks to achieve. Singh (1999, p. 21) explains rural development "must represent the entire gamut of change by which a social system moves away from a state of life perceived as 'unsatisfactory' towards a materially and spiritually better condition of life". In this sense, rural development is a comprehensive and multidimensional concept (Singh, 1999, p. 20).

Rural development can be interpreted in three different ways (Singh, 1999, p. 20):

1) As a phenomenon, which refers to rural development as a result of interactions between various institutional, sociocultural, physical, economic and technological factors.
2) As a strategy, which refers to rural development as a strategy to improve the economic and social well-being of the rural poor.
3) As a discipline, which explains rural development is multi-disciplinary in nature, representing an intersection of agricultural, social, behavioral, engineering and management sciences.

In the context of this thesis, rural development is interpreted as a phenomenon, which refers to rural development as a result of interactions between various institutional, sociocultural, physical, economic and technological factors (Singh, 1999, p. 20). This approach of rural development matches with the way the main research question is formulated since the main research question addresses rural development as a result of interactions concerning financial inclusion.

Furthermore, literature is reviewed to explore the determinants of rural development. A broad variety of sources is used to eventually generate four main determinants. Please see Appendix A for full analysis and sub-determinants. The four main determinants of the level of rural development can best be summarized as:

1. Enabling environment, which refers to policies and institutions providing sound overall macroeconomic policy and a supportive institutional framework (Hill et al., 2007, p. 469).

2. Reducing rural poverty by addressing basic needs, which refers to reducing absolute poverty by allowing people to fulfil basic requirements and achieve a decent life (Chiappero-

Martinetti, 2014; the World Bank, 1980). In rural society, women are often the poorest and most vulnerable members (Stockbridge & Dorward, 2013 p. 20). Furthermore, basic needs typically include food, clothing, shelter, drinking water, sanitation, education, healthcare, and public transportation (Chiappero-Martinetti, 2014).

3. Broad economic growth, which can best be explained by both agricultural and non-agricultural economic growth (Hill et al., 2007, p. 14; 27)
4. Availability of natural resources, which is import for sustainable rural development since natural resources – as input for the production process, of agriculture in particular – is crucial for both productivity and the people depending upon them (Hill et al., 2007, p. 471; Singh, 1999, p. 97; Stockbridge & Dorward, 2013)

It should always be acknowledged that rural development is a combination of the four main determinants. Real rural development is not possible when, for instance, rural areas experience economic growth while the availability of natural resources declines fast. Though, only one of the four main determinants of rural development is taken into account to 1) define a scope on the concept of rural development and 2) consider time constrains this thesis deals with. This determinant taken into account is 'reduced rural poverty by addressing basic needs'. The choice for this determinant is based on two theories: 1) development is a set of desirable objectives a society seeks to achieve, by Singh (1999, p. 20), and 2) basic needs are requirements of achieving a decent life, by Chiappero-Martinetti (2014). Since achieving a decent life is assumed to be what the people in rural areas seek to achieve most of all four determinants of rural development, this thesis expects 'reducing rural poverty by addressing basic needs' is the core of rural development.

Based on the above, the definition for rural development as used by this thesis is *the rural poor population – including women – being increasingly able to meet their basic needs in the rural areas they are living in, to improve their standards of living.* Via this definition, the core of rural development is addressed. Nevertheless, real rural development is always a combination of the four determinants.

2.4 The UN Sustainable Development Goals (SDGs)

In contemporary research on (rural) development, SDGs must be acknowledged since they provide a globally respected vocabulary on – and framework for – sustainable development. While sub-question 2 refers to the SDGs, this paragraph continues with an analysis of the SDGs and their societal and academic relevance.

The SDG framework is the successor of eight Millennium Development Goals (MDG), adopted by the UN member states to reduce extreme poverty by the year 2015. In 2015, the UN adopted seventeen

new goals, the SDGs (Figure 2; United Nations, 2020c), and committed themselves to work for the full implementation by the year 2030 (United Nations, 2015). The SDGs are a "set of global goals for fair and sustainable health at every level: from the planetary biosphere to the local community. The aim is to end poverty, protect the planet and ensure that all people enjoy peace and prosperity, now and in the future." (Morton, Pencheon, & Squires, 2017, p. 81). While Figure 2 is an overview, the 'Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development' (United Nations, 2019a) – from here onwards: 'SDG framework' – explains the SDGs in detail (United Nations, 2019a, 2020b).

Regarding the contemporary global environment, initially, the SDGs focused on national governments (United Nations, 2020a) but over the years, SDGs have globally been broadly implemented (Vaggi, 2018). For instance, local governments formulated policy around SDGs (Kroes, 2018; VNG, 2020), higher education has been assessed in the light of SDGs (Nhamo & Mjimba, 2020), and scholars even assessed entire European regions based on the SDGs (Zhelezov, 2015). Nowadays, the SDGs provide a globally respected vocabulary on – and framework for – sustainable development. To be able to interpret this thesis in the contemporary interpretation of development it is important to analyze findings in light of the SDGs. Additionally, institutions willing to contribute to SDGs experience challenges and barriers in operationalize and monitor the goals (Gusmão Caiado et al., 2018). By interpreting this thesis in the context of the SDGs as well, this thesis contributes to the perception of how FSPs can take responsibility for achieving SDGs and therefore provide tools on how to operationalize and monitor SDGs. Concluding, it is important to describe to what extent financial inclusion in rural areas of emerging and developing economies contributes to SDGs.

Figure 2. The United Nations Sustainable Development Goals (United Nations, 2020c)

2.5 Theoretical framework

Following the theory on the IVC by Clark et al. (2004), this paragraph combines the literature of the first three paragraphs into a theoretical framework. This framework presents how financial inclusion theoretically contributes to rural development. In doing so, the framework provides the foundation for selecting the variables which are to be measured to answer the research questions.

In the theoretical framework, the IVC's activities refer to financial inclusion, since it is the contribution of financial inclusion this thesis focusses on. Financial inclusion, as explained earlier, is defined as 'access, availability and usage of financial products and services for all social groups in society'. Successively, outputs are directly measurable results and outcomes are the ultimate changes to the social system, initiated by the outputs (Clark et al., 2004). In the literature review, the theoretical outputs and outcomes of financial inclusion are discussed and these are listed under either outputs or outcomes in the theoretical framework (Figure 3). As an outcome of financial inclusion, the literature review also listed 'Improved standards of living' (Table 2). Since this topic is part of the definition of rural development, the theoretical framework does not recall improved standards of living as an outcome of financial inclusion. Concerning rural development, this is referred to under the IVC's 'goal alignment' because the IVC is applied to visualize the theoretical contribution of financial inclusion to rural development. Furthermore, the original IVC interprets impact as the outcomes minus changes to the social system that would have happened anyway (Figure 1). Because this thesis focusses on a contribution instead of created impact, the theoretical framework replaces 'impact' with 'contribution'.

The process as presented by the theoretical framework may be iterative. When financial inclusion contributes to rural development and allows people to improve their standards of living, it is expected that the rural poor population appreciates these financial services which they voluntarily choose to use. Continuation of usage, most likely, results in the usage of higher values (Khan, 2011). This will increase their benefits of financial services, and people will continue to improve their standards of living. For this, when financial inclusion contributes to rural development, rural development in turn might contribute to financial inclusion and the interaction continues.

It must be noted that alternative explanations might be in place when results (partly) confirm the theoretical framework. An alternative explanation can be given since this thesis addresses correlations instead of causal relationships. This means, even if the theoretical framework is confirmed by the data, it is not possible to determine if financial inclusion boosts rural development, or the causal relationships is actually the other way around. If it is the other way around, there would be a need to boost rural development in other ways than financial inclusion to, in turn, increase financial inclusion

as a logical aftereffect. Another alternative explanation is that financial inclusion never stands on his own. Favorable external conditions can boost financial inclusion, for instance, when good governance is performed and peace is the norm (Kempson, Atkinson, & Pilley, 2004). These external conditions – which allow financial inclusion to increase – might also be the reason why identified outputs, outcomes and rural developments evolve independently. Therefore, financial inclusion, outputs, outcomes and rural development might be strongly correlated, while it is not financial inclusion but the beneficial external conditions causing the developments.

The theoretical framework also contributes to answering sub-question 2 and this works as follows. A direct contribution of financial inclusion concerns the SDGs that refer to either accessibility, availability or usage of financial services. Indirect contributions of financial inclusion to the SDGs are identified via the outputs and outcomes of financial inclusion, as conceptualized in the theoretical framework. When the data confirms financial inclusion contributes to an output or outcome, this thesis argues financial inclusion indirectly contributes to the SDGs that refer to that specific outputs or outcome.

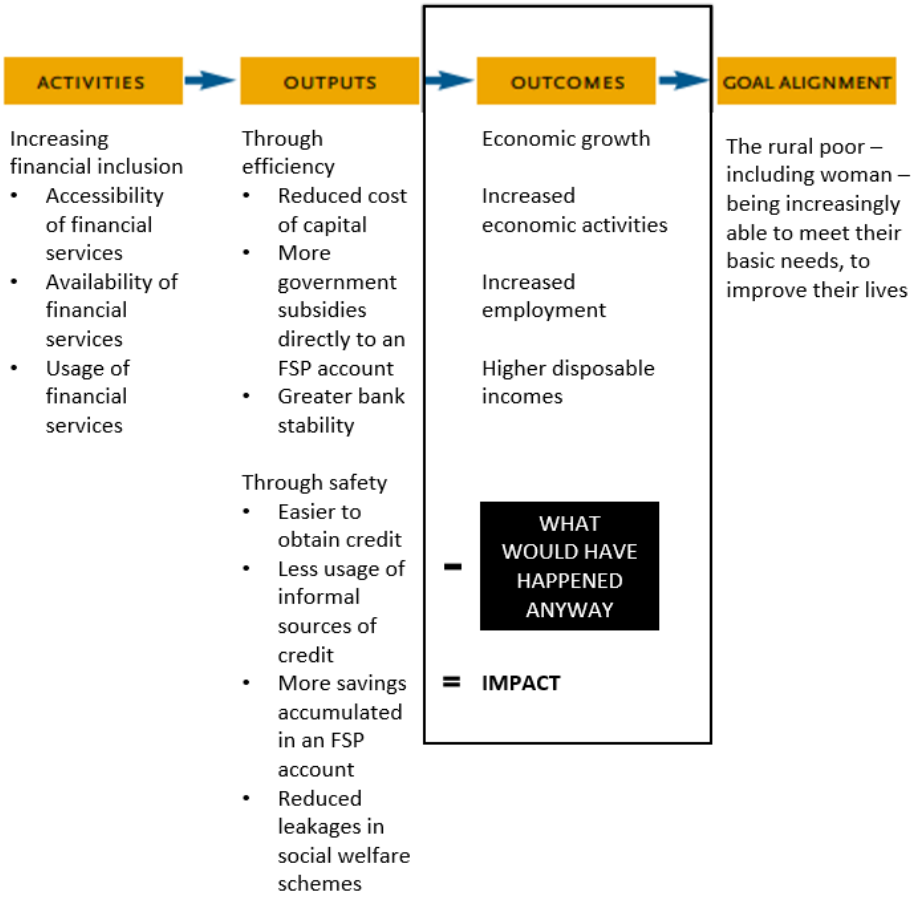

Figure 3 Theoretical framework

3. Research methods

Before the research questions can be answered, decisions have to be made regarding how research is performed. This chapter explains these choices by, firstly, introducing the 'blueprint' of the thesis: the research design. Secondly, choices on case selection are explained. These choices allow the inclusion of only the cases which provide data suitable to answer the research questions. Thirdly, used variables and measurable indicators are defined in the paragraph on operationalization. Fourthly, this chapter explains the data analysis methods.

3.1 Research design

This paragraph explains the choice for the research design which is the overall strategy used to effectively address the research questions (Kirshenblatt-Gimblett, 2006). Based on this strategy, the case selection method, data collection method, and the data collection method are chosen.

The type of design is determined by the goal of the research (Kirshenblatt-Gimblett, 2006). As explained in the introduction, this research is conducted along the lines of two main objectives: 1) to gain greater insight into whether and how financial inclusion contributes to rural development in emerging and developing economies, and 2) to examine to what extent increasing financial inclusion and its effects (in rural areas of emerging and developing economies) contributes to sustainable development as described by the SDGs.

To reach the first research objective, this study is designed as a cross-sectional study. Cross-sectional studies are studies in which all variables of a set of units are measured at one point in time and no variables are changed for a specific group within the study (Van der Kolk, 2013). For this thesis, using a cross-section research design comes with two major benefits, namely:

1) Cross-sectional studies allow measuring the effect on many independent variables which is (almost) not possible in other types of designs (Van der Kolk, 2013).

   Regarding the first research objective, it is beneficial to be able to measure many independent variables, because the thesis tests whether the theoretical framework is accurate in practice. To test this, each described output turns into an independent variable when analyzing its relation with the successive outcomes. In turn, outcomes are the independent variable when analyzing their relation with rural development.

2) Data is measured at one point in time.

   To address the research objectives, data over a couple of years is needed to allow a better insight in the contribution of financial inclusion to rural development since successive data show whether changes in financial inclusion and rural development do coexist. On the

contrary, because of the time constraints this thesis faces, measuring data over a couple of years would not be possible. Measuring historical data (on years in the past) at one point in time allows the usage of successive data.

Furthermore, this study used secondary data since – by the time of writing – globally many countries face both an economic and health crisis as a result of the COVID-19 pandemic. Gathering primary data from sources in emerging and developing economies was expected to be very difficult due to this crisis. Using secondary data is time-efficient, although a disadvantage is that the researcher depends on the data availability and secondary data might not exactly match what is ideally required (Van der Kolk, 2013c). In practice, online accessible international databases turned out to be suitable sources on many indicators matching the identified variables. This data is available only in the form of quantitative data. A benefit of using the international databases is that data is available for roughly every country in the world per similar set of indicators. It thus allows analysis and comparison of all selected emerging and developing economies.

In this thesis, cases are the selected emerging and developing economies. In some analysis, national data on a country or population as a whole is used (Data analysis part 1), some analysis concern data on the rural population (Data analysis part 2) and some concern national data on the female population (Data analysis part 3). To analyse the data, correlations are used as a tool to analyse the data and simple linear regressions are performed.

To reach the second research objective, findings used to answer sub-question 1 are compared with the literal explanation of the SDGs. Additionally, the second research objective does not describe the aim to research a causal relationship. The reasoning behind this is that every SDG is broad, with a variety of sub-SDG's and indicators. When financial inclusion seems to contribute to, for instance, one of the eight different sub-SDGs of SDG 6, it is not possible to claim financial inclusion contributed to SDG 6 as a whole. On the other hand, when findings indicate there is a strong correlation between financial inclusion and output A, it is reasonable to assume financial inclusion in some way contributes to the SDGs which describes output A.

To summarize the above, the research design chosen to answer the research questions is a cross-sectional study. This study applies case selection and uses correlations as a tool to analyse the data while depending on secondary quantitative data. A strength of this design is that – by using international databases – data on the same set of indicators is available for all selected countries. Therefore, many simple linear regressions can be performed. A weakness is that the research design leaves no room for additional qualitative research which could help to analyse country-specific backgrounds, explaining developments shown by data.

3.2 Case selection

The previous paragraph explained cases are the selected emerging and developing economies. First, this paragraph formulates three case selection criteria to select only the economies whose data contributes to answering the research questions. Based on these criteria, the countries listed in Appendix B are included in this thesis. Afterwards, this paragraph explains why are two types of cases used for data analysis: CountryYear cases and CountryDifference cases.

3.2.1 Case selection criteria

The selected cases are classified as 'influential cases' (Seawright & Gerring, 2008). This means the choice of whether or to select a case is motivated by "the need to check the assumption behind some general model" (Seawright & Gerring, 2008, p. 303). In other words, cases must be able to influence overall findings regarding the topic of the research. The usage of influential cases comes with a consequence: influential cases are not representative (Seawright & Gerring, 2008, p. 297) and therefore cannot be used for generalization of a sample as a whole. Regarding this thesis, this means emerging and developing economies are selected when their data can influence the findings on the contribution of financial inclusion to rural development. Also, it means the findings are not representative of emerging and developing economies as a whole. This paragraph continues by explaining the case selection criteria used to select influential cases.

The first selection criterion is that a case must be marked as an emerging or developing economy. This criterion is applied since the research questions clearly describe these are the economies to focus on. In deciding whether an economy is an emerging or developing economy this thesis depends on the IMF list of emerging and developing economies (IMF, 2020). This is expected to be a suitable source to base this criterion on since the IMF has been globally adopted as a guideline to distinguish between more and least developing economies (Gbadamosi, 2020; United Nations, 2014).

Case selection criterion 1: A country must be classified as emerging or developing economy by the IMF.

The second selection criterion is related to rural development. This thesis addresses a possible contribution of financial inclusion to rural development. In doing so, it is essential to consider other factors (than financial inclusion) which can influence the level of rural development and exclude these factors as much as possible. As defined in the literature review, in this thesis rural development address the ability to meet basic needs. To exclude cases of countries where people find it extraordinary difficult to meet basic needs due to national factors, the second selection criteria is that is country must experience a certain level of political stability and absence of violence. The indicator used for this criterion is one of the World Governance Indicators: 'Political Stability And Absence Of

Violence/Terrorism: Estimate' (FAO, 2017; the World Bank, 2020e). This indicator applies values ranging from approximately -2.5 to 2.5: higher values indicate higher levels of political stability; lower values indicate low levels of political stability. Regarding this thesis, to be selected a country needs an average of -1,0 over the years 2011, 2014 and 2017 – the same years of which data on indicators is analyzed. Using a minimum of -1,0 allows some imperfection in political stability, which is respectively not remarkable in emerging and developing economies. Though using -1,0 as a minimum excludes cases of extreme political instability and violence.

Case selection criterion 2: On 'Political Stability And Absence Of Violence/Terrorism: Estimate', a country must score at least a -1 as an estimate of the score of 2011, 2014 and 2017.

The third selection criterion is based on data availability. Please note data analysis is build up in three parts, further detailed in paragraph 3.5. Part 1 analyzes as many indicators as possible, using national data; part 2 analyzes only the indicators of which data per rural population is available, using data on the rural population; part 3 analyses the indicators of which data per female population is available, using national data on the female population. Although sometimes national data is used when no data for a country its rural population is accessible, data on rural areas is required since the research questions refer to 'rural' development specifically. To be able to use national data regarding research on rural developments, the third case selection criterion is formulated and only applied to cases used for data analysis part 1 and data analysis part 3. It says that a country should have a rural population of at least 60% of the total population in the years 2011, 2014 and 2017. The assumption underlying this is that national developments would imply similar development in rural areas when at least 60% of the national population is classified as rural. World Banks estimates of the percentage of the rural population are used (the World Bank, 2019).

Case selection criterion 3: In 2011, 2014 and in 2017, at least 60% of the total population of a country must be classified as rural.

This criterion is only applied for data analysis part 1 and part 3 where national data is used.

Selecting influential cases is beneficial for answering the research questions since by doing so, only cases which provide useful data on the contribution of financial inclusion to rural development are included. Though, there are some weaknesses which come with the inclusion criteria. Firstly, it is important to note the value for political stability and absence of violence/terrorism is a national estimate. For this, it might be possible that a country has relatively stable and safe urban areas, while

the rural inhabitants – living relatively isolated and plausibly in border regions – do fall victim to violence and terrorism. To illustrate this, in 2018, Burkina Faso experienced a major increase in Jihadist attacks (33 in 2017, 158 in 2018) while basically only the border regions were attacked (ACLED, 2018; Dewast, 2019). Secondly, by including influential cases only, the results cannot be used for generalization of emerging and developing economies as a whole.

As the case selection criteria are applied, thirteen countries are selected for data analysis part 1 and part 3. For part 2, 126 countries are selected. Please see Appendix B for the list of selected countries.

3.2.2 Usage of two types of cases

This paragraph explains what exactly is approached as a case in order to perform simple linear regressions and used correlations as a technique to analyze the data. Also, it explains the reasoning behind the usage of two types of cases.

To perform simple linear regressions and use correlations as technique, the selected emerging and developing economies are transferred into two types of cases. These are the following:

1) CountryYear cases

   A CountryYear case represents the values of a country in a specific year. For instance, the case 'Tanzania 2011' represents the values of the indicators as measured in Tanzania in 2011. Other cases would be 'Vietnam 2011' or 'Tanzania 2014'. When creating a scatterplot to visualize the correlation between 'Indicator A' and 'Indicator B', every dot in the scatterplot represents one CountryYear case while the values for 'Indicator A' are represented by the X-as and the values for 'Indicator B' are represented by the Y-as. When analyzing CountryYear cases, only indicators with data on a specific year are used.

2) CountryDifference cases

   A CountryDifference case represents the values for a country, in comparison with the values for the same country as measured three years before. For instance, the case 'Tanzania difference between 2011 and 2014' represents the difference in a timespan of three years. Also for CountryDifference cases counts that every dot in the scatterplot represents one case. When analyzing CountryDifference cases, only indicators with data on the difference are used. The following example explains how the values of the indicators for CountryDifference cases are calculated:

   Indicator A difference between 2011 and 2014 = Indicator A 2014 – Indicator A 2011

While correlations with CountryYear cases represent whether two indicators coexist, correlations with CountryDifference cases imply whether two indicators develop simultaneously. Analyzing both types of cases separately comes with two major benefits:

1) When CountryYear cases imply two indicators strongly coexist while CountryDifference cases imply the same indicators weakly develop simultaneously, this could refer to a causal relationship where one indicator quickly develops and the other one slowly follows but – when enough time has passed – the level of both indicators strongly correlate.
2) By adding CountryDifference cases, growth (or decline) is compared. This makes countries more comparable: when a country scores extraordinary high on a certain indicator in 2011, 2014 and 2017, and another country scores extraordinary low on that same indicator, the difference between the countries is left out of consideration since only growth or decline (timespan of three years) is analyzed.

Repeating the above, for analysis of CountryYear cases, only indicators with data on a specific year are used. For analysis of CountryDifference cases, only indicators with data on the difference over a time span of three years are used. To visualize this, table 3 both presents the structure of the dataset used for CountryYear cases and the structure used for CountryDifference cases. In addition, figure 4 visualizes the structure of the data analysis.

Table 3. Structure of the dataset, using Tanzania as example

Country	Year	Case	Indicator A	Indicator B
Dataset of CountryYear cases				
Tanzania	2011	Tanzania in 2011	a	d
Tanzania	2014	Tanzania in 2014	b	e
Tanzania	2017	Tanzania in 2017	c	f
Dataset of CountryDifference cases				
Tanzania	Difference between 2011 and 2014	Tanzania: difference between 2011 and 2014	b minus a	e minus d
Tanzania	Difference between 2014 and 2017	Tanzania: difference between 2011 and 2014	c minus b	f minus e

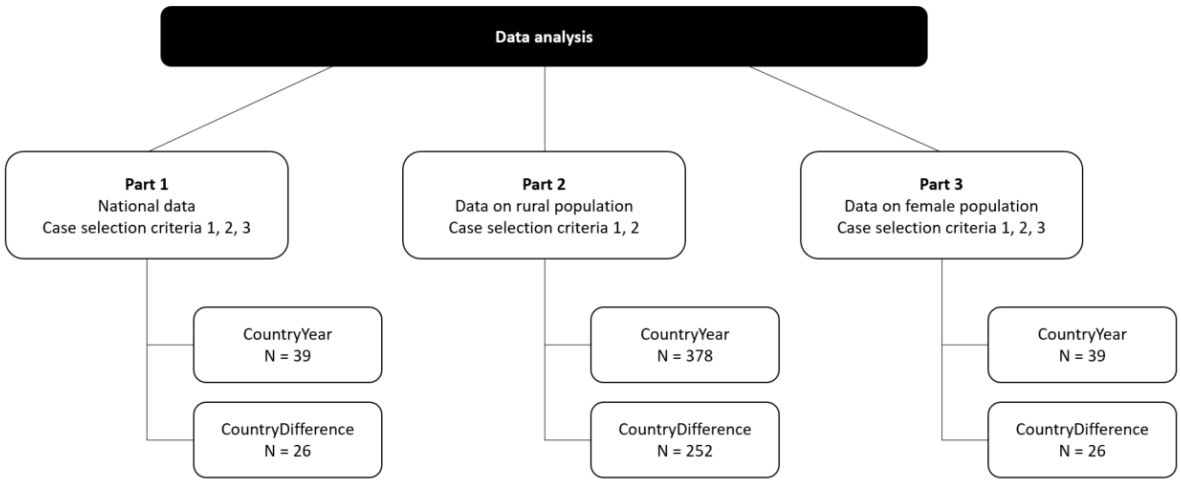

Figure 4. Overview of the structure of the data analysis

3.3 Operationalization

The previous chapter introduced the theoretical framework of how financial inclusion theoretically contributes to rural development (Figure 3). To answer the research questions – and sub-question 1 in particular – it is important to test whether the theoretical framework matches reality. To test this, from here onward the topics listed in the theoretical framework will be approached as variables and, in this paragraph, measurable indicators are defined for as many variables as possible.

To identify the variables which can be used for this thesis, this paragraph firstly recalls the variables listed in the theoretical framework. Afterwards, relevant indicators found in international databases are appointed to the variables. If no indicator is found to be suitable, this variable has to be excluded for the data analysis. At last, this paragraph concludes with model 4 visualizing the variables of which indicators are available and thus are included in this thesis.

Please note the tables in this paragraph present a simplified overview of the indicators used. The tables only present the indicators used for data analysis part 1 regarding CountryYear cases. When applied to either part 2, part 3, a gender gap or CountryDifference cases, these indicators are slightly transformed. Please see Appendix C for the exact descriptions of all indicators used, including data source.

3.3.1 Operationalizing the concept of financial inclusion

First, financial inclusion is operationalized. The literature review explained financial inclusion is a combination of accessibility, availability and usage of financial services. Based on the literature, accessibility can be measured by the number of bank accounts per 1000 people; availability by the number of bank branches and the number of ATMs per million people; usage by the dimension is the

volume of credit plus deposit, relative to the GDP (Sarma, 2008; Sarma & Pais, 2010, pp. 615-616). These indicators are based on traditional banking. Literature also explains the main cause of the increasing access to financial services is to be found in the growth of usage in mobile and internet banking (Demirguc-Kunt et al., 2018, p. 22). Consequently, nowadays the number of (tradition) bank branches and ATMs per million people is less important for indicating the level of financial inclusion. Regarding the indicator 'Volume of credit plus deposit, relative to the GDP' it has to be stated that not enough data is available to calculate this. Consequently, only the variable 'Accessibility of financial services' is used to indicate the level of financial inclusion (Table 4).

Table 4. Financial inclusion: summary of variables and indicators

Variable	Indicator	Abbreviation	Availability for data analysis
Accessibility of financial services	Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+)	Account	Part 1, national data Part 2, rural data Part 3, female data

3.3.2 Operationalizing outputs of financial inclusion

Variables describing outputs of financial inclusion are listed in the theoretical framework as well. Regarding these variables, no indicator is available for the variables 'reduced cost of capital' and 'Reduced leakages and theft in social welfare schemes' and therefore, these variables are excluded. Regarding the included variables, the indicator for the variable 'More government subsidies being paid out directly to FSP accounts' perfectly matches its indicator since the indicator describes how many government subsidies went into a beneficial bank account directly, as a percentage of all paid government subsidies (Table 5).

Secondly, the indicator for 'Greater bank stability' requires some more explanation. Only one indicator can provide data on a topic relevant for bank stability: 'Bank capital to assets ratio (%)'. This indicator is relevant since capital says something about banks' ability to absorb losses and thus prevent bankruptcy. It has to be noted that this indicator is only a proxy since bank stability depends on more factors. For instance, a bank's liquid reserves indicate a bank's ability to repay customers' savings if customers demand this on a short turn. Still, since no other indicators are available or provide enough data, this is the only indicator used to indicate bank stability. Also, it should be noted that this indicator only addresses traditional banks.

Regarding the variable 'Less usage of informal sources of credit' only one indicator is available: Borrowed from family or friends (% age 15+) (Table 5). Applying this indicator means sources of informal credit, other than family/friends, are not included. Though, based on the assumption that

sooner or later people would consult family or friends when in financial need, it is expected that the percentage of people borrowing from family/friends shows similar patterns as the percentage of people using informal sources of credit as a whole.

Regarding the variables 'Easier to obtain credit' and 'More savings accumulated in an account', it is expected the indicators listed in table 5 speak for themselves. Regarding both variables, one indicator is available on the percentage of people making use of official credit or a savings account, another indicator describes the total national value of credit obtained or savings accumulated.

Table 5. Outputs of financial inclusion: summary of variables and indicators

Variable	Indicator	Abbreviation	Availability for data analysis
More government subsidies being paid out directly to FSP accounts	Received government payments: into an account (% payment recipients, age 15+)	Government payments	Part 1, national data
Greater bank stability	Bank capital to total assets (%)	Bank capital	Part 1, national data
Easier to obtain credit	Borrowed from a financial institution or used a credit card (% age 15+)	Borrowed institution	Part 1, national data Part 2, rural data Part 3, female data
	Domestic credit to private sector (% of GDP)	Domestic credit	Part 1, national data
Less usage of informal sources of credit	Borrowed from family or friends (% age 15+)	Borrowed informal	Part 1, national data Part 2, rural data Part 3, female data
More savings accumulated in an account	Saved at a financial institution (% age 15+)	Saved	Part 1, national data Part 2, rural data Part 3, female data
	Adjusted savings: net national savings (current US$)	National savings	Part 1, national data

3.3.3 Operationalizing outcomes of financial inclusion

This paragraph continues with operationalizing the outcomes of financial inclusion. Regarding 'increased economic activities' no indicator is found available. Furthermore, regarding 'Higher disposable incomes' indicators are available such as indicators addressing a poverty line. Though, since these indicators are only available on the national level and thus can only be applied in data analysis part 1, the surprisingly limited data availability of these indicators for the thirteen – in part 1 included – countries makes it impossible to apply the indicators. Therefore, also the variable 'Higher disposable incomes' cannot be used in this thesis. This results in 'Economic growth' and 'Employment' being the variables addressed regarding outcomes of financial inclusion (Table 6).

With respect to economic growth, international sources provide valuable data on a country's GDP. The first indicator used is 'GDP per capita (constant 2010 US$)'. This indicator is selected since GDP per capita gives a good impression of the total economic performance of a country. Also, applying a constant US$ – instead of current currency values or local currencies – allows a better comparison between countries. Furthermore, 'GDP per capita, PPP (constant 2017 international $)' is added as an indicator since PPP refers to purchasing power parity. This indicator thus – to some extent – translates economic growth to the extent that citizens benefit from economic growth. Similar to GDP per capita, a constant currency is chosen to allow comparison between countries and years. Moreover, using the Gini-coefficient would have added to this thesis. This coefficient represents the extent to which income among individuals is equally distributed (the World Bank, 2020d). Unfortunately, due to limited data availability, this indicator could not be used.

Furthermore, 'increased employment' can be investigated via the employment to population ratio. This indicator includes ages 15+ so also children of, for instance, 16 years old are included. These children being unemployed is not particularly a bad thing since they might be unemployed to attend education. Though, the effect of young people attending education on the results is likely to be limited since – in emerging and developing economies – only a few attend education after turning 15 years old (UIS.Stat, 2020). In addition, a strength of using this indicator is that it represents both formal and informal employment (The World Bank, 2020b). This is beneficial since in emerging and developing counties much of the employment is informal and therefore often not registered (Bonnet, Vanek, & Chen, 2019).

Table 6. Outcomes of financial inclusion: summary of variables and indicators

Variable	Indicator	Abbreviation	Availability for data analysis
Economic growth	GDP per capita (constant 2010 US$)	GDPpc	Part 1, national data
	GDP per capita, PPP (constant 2017 international $)	GDPpcPPP	Part 1, national data
Increased employment	Employment to population ratio, 15+, total (%) (modeled ILO estimate)	Employment	Part 1, national data

3.3.4 Operationalizing outcomes of rural development

Continuing to operationalize the theoretical framework, the next topic is rural development. Repeating the literature review, rural development is defined as 'the rural poor population – including women – being increasingly able to meet their basic needs in the rural areas they are living in, to improve their standards of living.' Since this definition builds upon people's ability to meet their basic

needs, the basic needs are perceived as variables: nutrition, clothing, shelter, drinking water, sanitation, education, healthcare, and public transportation. A suitable indicator is found for five of these basic needs: nutrition, drinking water, sanitation, education and health care (Table 7).

Nutrition is indicated by the well-suited indicator 'Prevalence of undernourishment (% of population)'. The lower the percentage, the better the availability of nutrition for all members of society. Availability of drinking water and sanitation is also indicated by a straightforward indicator (Table 7). Availability of education is perceived as access to at least basic education. Therefore, the indicator concerning primary school enrollment is selected. The World Bank, Data Catalog (2020f): "Primary education provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music." This indicator is available as '% gross' and '% net'. The first is chosen since this also includes children older than the official school-age enjoying basic education (the world Bank, 2020f). Since the indicator provides the ratio of children of official school age, % of gross can be higher than 100%. Lastly, the accessibility of health care is indicated by two indicators. The first is regarding the maternal mortality ratio. This is expected to decrease when access to health care improves. The second is regarding the immunization of children with the DPT vaccine. This relatively basic vaccine protects people against diphtheria, pertussis and tetanus and the availability of this vaccine is considered to be a good indicator for the general availability of basic health care.

The final indicator for rural development addresses the ability to meet basic needs indirectly: 'Coming up with emergency funds: not possible (% age 15+)'. Having access to funds in case of emergency reflects people's ability to pay for unforeseen expenses when "something dangerous (…) happens suddenly or unexpectedly and needs fast action in order to avoid harmful results' (Cambridge Dictionary, 2020). Therefore, for instance, this indicator reflects people's ability to pay for health care when someone is badly injured, or pay for home repairings when a house is heavily damaged in a storm. In other words, when people have access to emergency funds, basic needs can be better addressed when fast action is required. Adding this indicator adds to the quality of this study since – unlike some other indicators on rural development – is available for part 1, part 2 and part 3 of the data analysis. This allows a comparison between these parts.

Table 7. Rural development: summary of variables and indicators

Variable	Indicator	Abbreviation	Availability for data analysis
Nutrition available	Prevalence of undernourishment (% of population)	Undernourishment	Part 1, national data
Drinking water available	People using at least basic drinking water services (% of population)	Drinking water	Part 1, national data Part 2, rural data
Basic sanitation available	People using at least basic sanitation services (% of population)	Sanitation	Part 1, national data Part 2, rural data
Basic education available	School enrollment, primary (% gross)	Education	Part 1, national data Part 2, rural data
Basic health care available	Maternal mortality ratio (modeled estimate, per 100,000 live births)	Maternal mortality	Part 1, national data Part 3, female data
	Immunization, DPT (% of children ages 12-23 months)	Immunization	Part 1, national data
Emergency funds available	Coming up with emergency funds: not possible (% age 15+)	No emergency funds	Part 1, national data Part 2, rural data Part 3, female data

3.3.5 Operationalizing the concept of contribution

Lastly, the literature review explained the impact definition of Clark et al. (2004) is 'outcomes which would not have happened without the venture's activities'. According to Clark et al. (2004) and following his IVC, a counterfactual is needed to investigate how an environment would behave when the venture did not perform the activities of interest. Though, this thesis does not investigate venture's activities, nor are the areas of interest compared to other areas since only influential cases are selected. To still be able to argue whether outcomes would have happened anyway, this thesis analyses the strength of correlations with the outcomes. It is assumed to be likely that a higher level of outcomes A is to some extent contributed to by the variables which are strongly and positively correlated with outcome A (Sig. < 0,05). Since the existence of correlations does not say anything about a causal relationship, the term 'impact' cannot be applied here. Concluding, this thesis cannot determine any impacts of one variable on another, but – when the indicators of two variables are significantly, strongly and positively correlated – this thesis speaks of a mutual contribution of two variables towards one another.

This paragraph approached the topics listed in the theoretical framework as variables. Also, measurable indicators are defined for as many variables as possible. Only the variables of which measurable indicators are available can be analyzed and thus, variables of which no measurable indicators are available are excluded from this research. As a conclusion of this paragraph, figure 5

presents a version of the theoretical framework which only shows the variables which can and will be measured. The next paragraph builds upon figure 5 be explaining what exact relationships are analyzed per data analysis part 1, part 2 and part 3.

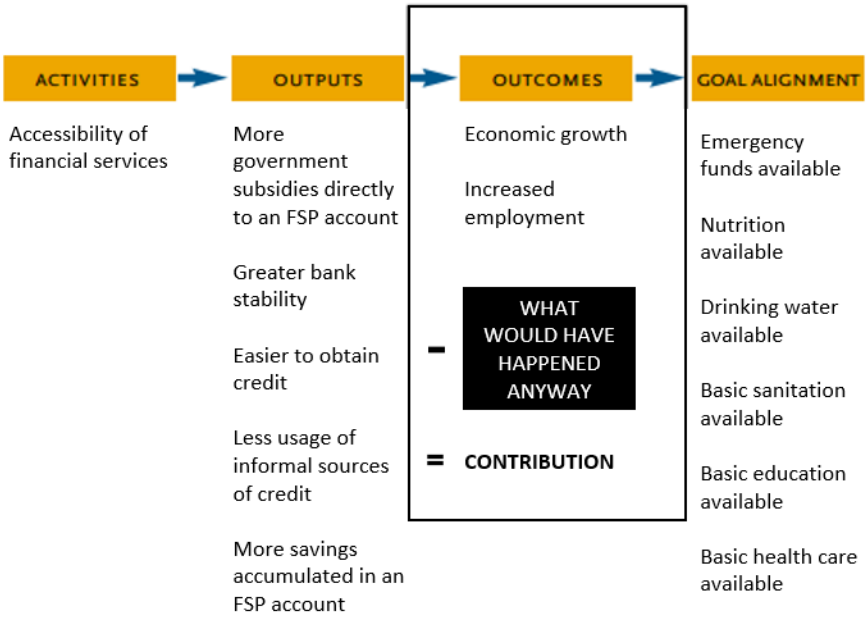

Figure 5. Theoretical framework, only the variables which are measured

The strength of the way operationalization is performed is that all variables are based on a broad literature review. Also, the indicators are derived from international databases which apply similar indicators for all countries of interest. Thus, the indicators provide comparable data. A major weakness is found in the dependency on data availability. For some variables, a perfectly matching indicator is available while for other variables – like on bank stability – only an indicator which just partly illustrates a variable can be applied. When the latter is the case, a variable cannot be measured as a whole and this can affect the results.

3.4 Data analysis method

This paragraph explains why the data analysis is divided into three parts: part 1 using national data, part 2 using data on the rural population, and part 3 using national data on the female population. It also explains the choice for simple linear regressions to analyze the data regarding sub-question 1. Furthermore, this paragraph explains the analysis applied to answer sub-question 2.

3.4.1 Data analysis method regarding sub-question 1

As explained in the section on operationalization, on some indicators only national data is available. To make use of this data and analyze the variable they correspond with, data analysis part 1 applies national data regarding all the variables. By using only national data, part 1 does not analyze parts of

the data which are relevant as well, namely data on the rural population and female population specifically. To still make use of this data, data analysis part 2 and part 3 are added.

Data analysis part 2 consists of the analysis of data on the rural population specifically. This comes with two major benefits for answering the research questions. Firstly, when addressing the contribution of financial inclusion to rural development, data on the rural population is most effective since it excludes urban areas' influence on the results. Secondly, using data per rural population means there is no need to select cases based on the percentage of the rural population in the country (selection criterion 3). This means a much bigger sample size (hereafter referred to with 'N') is available, which strengthens the accuracy of the results. Data on the rural population is not available for all indicators (Table 4, 5, 6, 7) and therefore, fewer variables can be analyzed in part 2 compared to part 1. In practice, only five variables can be included in part 2: 'Accessibility of financial services', 'Easier to obtain credit', 'Less usage of informal sources of credit', 'More savings accumulated in an account', and 'Addressing basic needs'. Including only these five variables comes with a major weakness. Because no indicators on outcomes are available, the outputs are directly analyzed in relationship with 'Addressing basic needs'. Though, based on the literature outcomes are the link between outputs and rural development. Therefore, the link between the outputs and people's ability to meet their basic needs is not backed by literature and expected to be very weak, if significant.

Data analysis part 3 analyzes variables with data on the female population only. This is included in the data analysis for two reasons: 1) in the literature review the importance of taking women into account is stressed (Demirguc-Kunt et al., 2018; Stockbridge & Dorward, 2013, p. 20), and 2) this thesis' definition of rural development partly refers to the female population. Therefore, when analyzing a contribution to rural development, it is important to take the female population into account. Adapting to the data availability for the female population, a specific set of variables can be analyzed regarding part 3.

Simple linear regressions are performed to analyse the collected data. The order of the performed regressions is based on the IVC: Financial inclusion to outputs, outputs to outcomes, and outcomes to rural development. In addition, when possible simple linear regressions are performed between financial inclusion and the outcomes. These regressions are added since the selection of the outcomes is based on theory, theory which itself linked an outcome directly to financial inclusion. By skipping the outputs in the analysis, the direct relationship of financial inclusion with the outcomes is investigated. It also indicates the probability that other factors than the measured outputs play a role in how financial inclusion create outcomes. Via arrows, figure 6 presents the simple linear regressions

which are performed regarding data analysis part 1. Additionally, figure 7 visualizes the regression performed regarding part 2 and figure 8 presents the regressions regarding part 3.

The regressions provide information on how strong indicators are correlated and whether this correlation is significant and positive. As measure for the strength of correlations, the value of R^2 is used (Table 8) (Hayes, 2020). For a correlation to be significant, this thesis applies a significance value (Sig.) of < 0,05. Lastly, a correlation is positive when the dependent variable increases along with the increasing value of the independent variable. Please note some indicators are the opposite of what the corresponding variable represent. When that is the case, a negative correlation between the indicators stands for a positive correlation between the variables. For instance, a decrease of the indicator 'Undernourishment' means an increase of the variable 'Nutrition available'.

Table 8. Interpretation of the R^2 values

Value of R^2	**Interpretation of the R^2 value**
> 0,4	Strong correlation
0,2 < R2 ≤ 0,4	Weak correlation
R2 ≤ 0,2	Very weak correlation

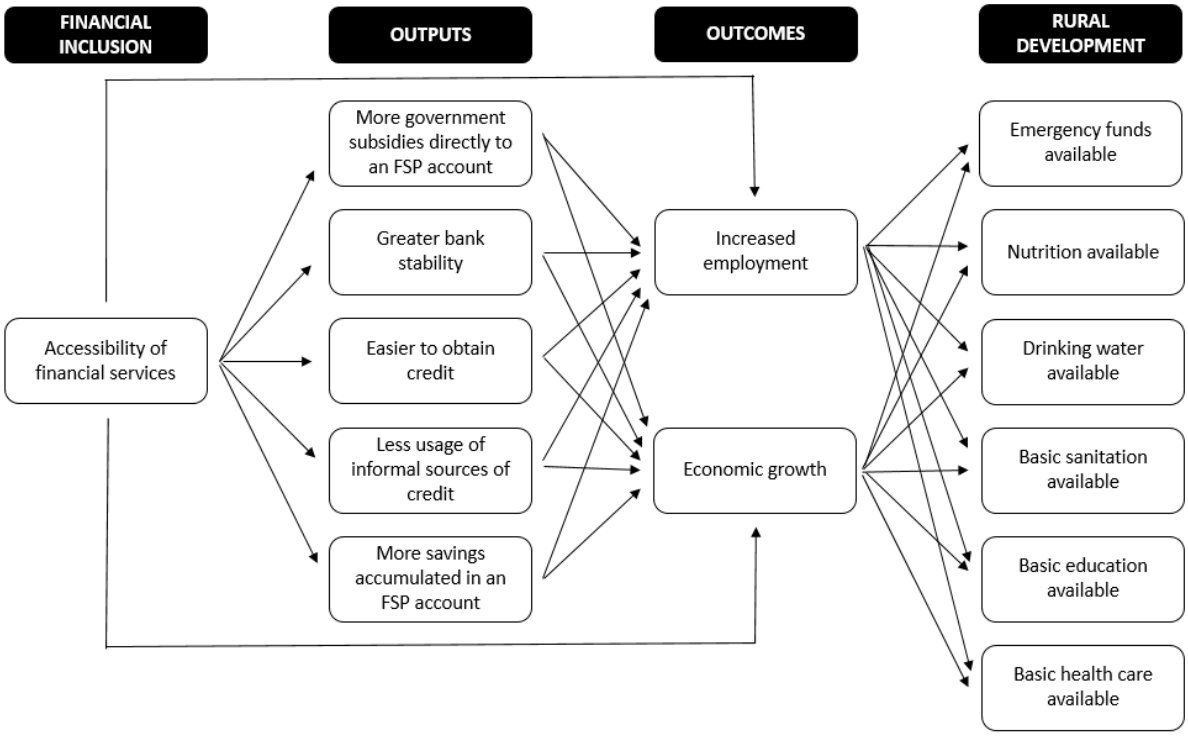

Figure 6. Data analysis part 1: Performed simple linear regressions presented by arrows

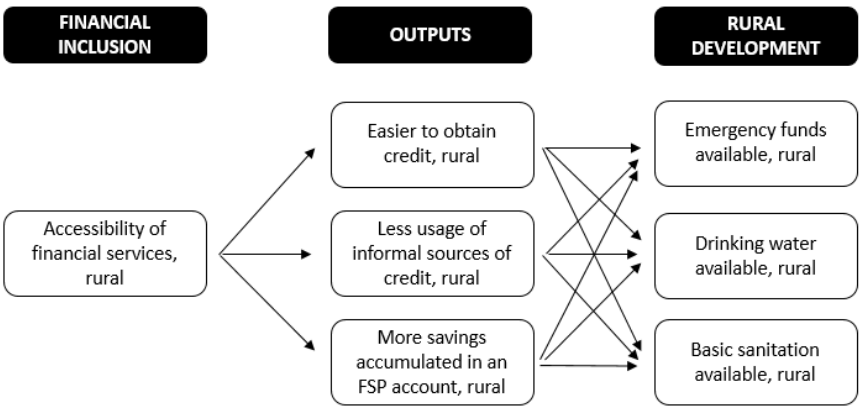

Figure 7. Data analysis part 2: Performed simple linear regressions presented by arrow

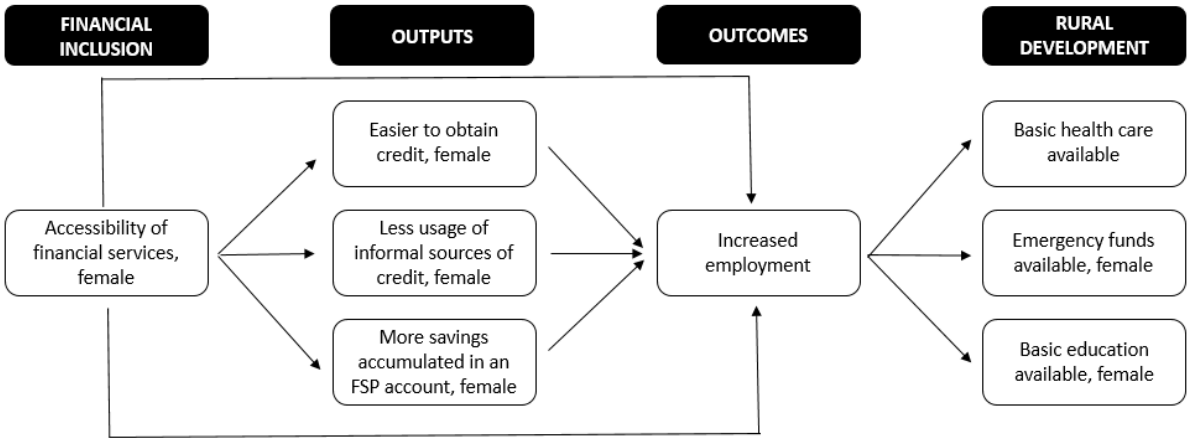

Figure 8. Data analysis part 3: Performed simple linear regressions presented by arrow

3.4.2 Data analysis method regarding sub-question 2

This paragraph continues by explaining the data analysis method as applied to answer sub-question 2. The analysis leading to results of sub-question 2 builds on 1) the results of sub-question 1, and 2) a comparison of these results with the literal and official explanation of the SDGs (United Nations, 2019a). This works as follows.

When results of sub-question 1 indicate financial inclusion seems to – for instance – contribute to output A, the results of sub-question 2 indicate that financial inclusion contributes to the SDG which describes output A. For instance, when increased financial inclusion is strongly and positively correlated with greater bank stability (Sig. < 0,05), this indicates there is at least a mutual contribution between the two. Also, it indicates financial inclusion contributes to SDG 8 via sub-SDG 8.10: "Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all".

A major strength of this data analysis method is that a solid academic foundation is provided so argue for the contribution of financial inclusion to specific SDGs. Furthermore, as mentioned in the literature review, institutions experience challenges and barriers in operationalize and monitor the SDGs (Gusmão Caiado et al., 2018). By applying this analysis method regarding sub-question 2, this thesis provides an example of how organizations can operationalize and monitor contributions to SDGs. A weakness of this method is explained by the following. It could have been beneficial to measure contributions to SDGs via applying the official SDG indicators. Via that way, the contributions to the SDGs could have been measured in more detail. Though, due to time constraints and limitation in the data availability, this thesis was not able to do so.

This chapter explained this thesis is a cross-sectional study, using secondary quantitative data, and applying correlations as a tool to analyze the data. For this study, this means variables are identified based on theory and indicators are selected based on what data is available. The data is analyzed via simple linear regressions. Each case as included in the regressions is either a country in a specific year (CountryYear) or a country in combination with the difference in a timespan of three years (CountryDifference). This means countries are not analyzed over a period of time, but via correlations the relationship between indicators is analyzed for all cases at once. In addition, data analysis is divided into three parts to analyze as many variables as identified by the literature as possible.

4. Data analysis

The research methods explained by the previous chapter are applied in order to find answers to the research questions. Following, this chapter analyses the data. This is an important part of the thesis since the answer to sub-question 1 is based on these analyses. Echoing the introduction, sub-question 1 is formulated as: 'To what extent does financial inclusion in rural areas, in selected cases of emerging and developing economies, contribute to rural development?'

As explained in the research design, there are two types of indicators (Table 3):

1) Indicators providing data on a specific year: 2011, 2014, or 2017. These indicators are used for cases where a country and a specific year make one case (CountryYear).
2) Indicators providing data on the difference in a timespan of three years. These indicators are used for cases where a country and the period between 2011 and 2014, or between 2014 and 2017, make one case (CountryDifference).

Because of the following, fewer CountryDifference cases are available than the number of CountryYear cases. When for country A data is available per 2011, 2014, and 2017, three CountryYear cases are available. Though, only two Differences can be calculated: Difference between 2011 and 2014, Difference between 2014 and 2017. Please note that when for an indicator data is not available for a country in a specific year, the N for the linear regressions concerning that indicator is smaller.

The paragraphs of this chapter present the results in figures and explain the most important findings in the text. The figures visualize whether the theoretical framework matches reality. Please note the tables in this chapter presents the values of the findings discussed in the text. Additionally, Appendix D lists the values of all performed linear regressions and Appendix E contains the scatterplots referred to in the text.

4.1 Data analysis, part 1: national data

First, the regressions regarding CountryYear are analyzed and afterwards, the regressions regarding CountryDifference cases are discussed. The selection criteria regarding part 1 resulted in the inclusion of thirteen countries. For analysis of CountryYear cases, this means N = 39. Please see table 9 and 10 for the values of the discussed correlations.

4.1.1 Data analysis part 1, CountryYear cases

When analyzing the data regarding CountryYear cases, several things stand out. Firstly, 'Accessibility of financial services' and 'More government subsidies being paid out directly to FSP accounts' are strongly and positively correlated, while the latter is negatively correlated with 'Increased employment' and 'Economic growth'. A possible explanation could be that, in states where

employment rates are low and economic growth is little, governments and individuals seek effective ways to transfer government payments to the accounts of people in need. Thus, account ownership increases. Secondly, different than expected by literature, 'Accessibility of financial services' and 'Greater bank stability' is negatively weakly correlated (Appendix E: Figure 24). This means the more people own an FSP account, the smaller a bank's capital as a percentage of total assets is.

Furthermore, based on the following findings, the data indicates financial inclusion and economic growth are very much related:

1) The direct regressions between 'Accessibility of financial services' and 'Economic growth' resulted in a strong and a weak positive correlation (Appendix E: Figure 22; Figure 23).
2) Both 'Accessibility of financial services' and 'Economic growth' are strongly correlated with 'More savings accumulated in an account'. This suggests financial inclusion and economic growth are indirectly related to each other via people accumulating more savings.
3) Based on this thesis' definition of financial inclusion, the outputs 'Easier to obtain credit' and 'More savings accumulated in an account' represent financial inclusion as well: they refer to the usage and availability of financial services. The significant correlations between these two outputs and 'Economic growth' indicate financial inclusion and economic growth are related.

The many positive correlations between outputs and economic growth also seem to indicate that economic growth affects financial inclusion's outputs. For instance, more people accumulating savings can contribute to economic growth since – when savings are available – more people would be able to invest in economic opportunities. Also, it is reasonable to assume that economic growth causes an increase in income which in turn allows more people to accumulate savings. The assumption that economic growth affects financial inclusion's outputs argues for economic growth (also) contributing to financial inclusion. Therefore, financial inclusion and economic growth seem to be connected and possibly contribute to each other, without claiming a causal relationship between the two.

All in all, data indicates 'Economic growth' is the link between financial inclusion and addressing basic needs. It is striking that a strong and positive correlation is found between 'Economic growth' and both 'Drinking water available' and 'Basic sanitation available'. In addition, 'Economic growth' is weakly correlated with 'Nutrition available' and 'Basic health care available'. Possibly, developing and emerging economies that experience increased economic growth can easily provide more drinking water and sanitation services while improving the availability of health care and nutrition is more complicated. In sharp contrast with 'Economic growth', 'Increased employment' seems to play no role in increasing individual people's ability to address basic needs. Not a single indicator of rural development showed a correlation with 'Employment'.

Table 9. Part 1: CountryYear cases. Values of the mentioned correlations

Variable (indicator)	Variable (indicator)	N	Sig.	R^2
Regressions between indicators of financial inclusion and indicators of outputs				
Accessibility of financial services (Account)	More government subsidies being paid out directly to FSP accounts (Government payments)	17	0,001	0,515
Accessibility of financial services (Account)	Greater bank stability (Bank capital)	25	0,009	0,264
Regressions between indicators of financial inclusion and indicators of outcomes				
Accessibility of financial services (Account)	Economic growth (GDPpc)	39	0,000	0,451
Accessibility of financial services (Account)	Economic growth (GDPpcPPP)	39	0,000	0,321
Regressions between indicators of outputs and indicators of outcomes				
More government subsidies being paid out directly to FSP accounts (Government payments)	Increased employment (Employment)	13	0,004	0,537
More government subsidies being paid out directly to FSP accounts (Government payments)	Economic growth (GDPpcPPP)	17	0,455	0,038
More savings accumulated in an account (Saved)	Economic growth (GDPpc)	39	0,000	0,402
More savings accumulated in an account (Saved)	Economic growth (GDPpc)	39	0,000	0,402
More savings accumulated in an account (Saved)	Economic growth (GDPpcPPP)	39	0,000	0,294
More savings accumulated in an account (National savings)	Economic growth (GDPpc)	39	0,000	0,309
More savings accumulated in an account (National savings)	Economic growth (GDPpcPPP)	39	0,000	0,404
Easier to obtain credit (Borrowed institution)	Economic growth (GDPpcPPP)	26	0,007	0,263
Easier to obtain credit (Domestic credit)	Economic growth (GDPpcPPP)	24	0,008	0,212
Regressions between indicators of outcomes and indicators of rural development				
Economic growth (GDPpcPPP)	Nutrition available (Undernourishment)	36	0,002	0,259
Economic growth (GDPpc)	Drinking water available (Drinking water)	39	0,001	0,256
Economic growth (GDPpcPPP)	Drinking water available (Drinking water)	39	0,000	0,428
Economic growth (GDPpcPPP)	Basic sanitation available (Sanitation)	39	0,000	0,433
Economic growth (GDPpc)	Basic sanitation available (Sanitation)	39	0,000	0,302
Economic growth (GDPpc)	Basic health care available (Maternal mortality)	39	0,002	0,232
Economic growth (GDPpcPPP)	Basic health care available (Maternal mortality)	39	0,000	0,385
Additional regressions				
Accessibility of financial services (Account)	More savings accumulated in an account (Saved)	39	0,000	0,590

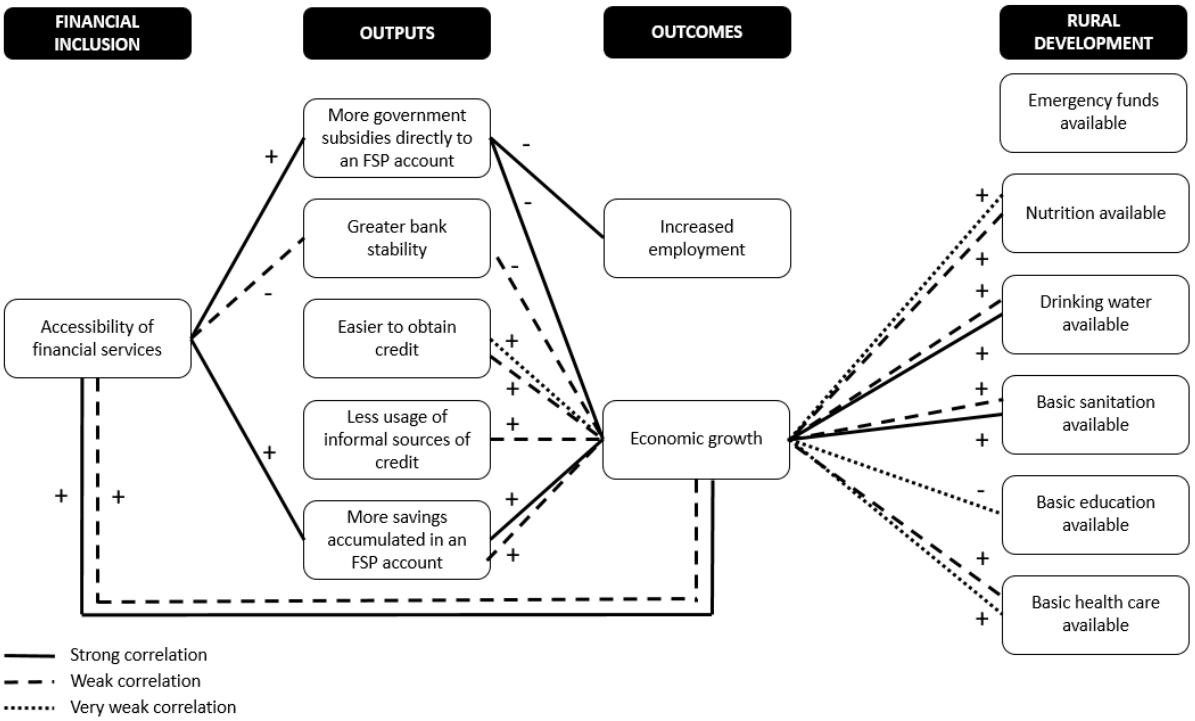

Figure 9. Results part 1 regarding CountryYear cases, only significant findings (sig. < 0,05)

4.1.2 Data analysis part 1, CountryDifference cases

The analyses with CountryDifference cases (N = 26) are interesting additions to the results since it shows whether indicators change simultaneously. As explained, for this analysis a smaller N is available in comparison to the CountryYear cases. Please note results of regressions are only taken into account when N ≥ 10 to avoid conclusions are drawn based on an exceptional small N. The results are visualized in figure 10.

Firstly, when using CountryDifference cases, 'Accessibility of financial services' and 'Greater bank stability' are even stronger negatively correlated (R^2 = 0,581; Appendix E: Figure 25) than regarding CountryYear cases (R^2 = 0,264; Appendix E: Figure 24). This suggests increased account ownership comes with a great decline in bank capital as a percentage of a bank's total assets. Two possible explanations are:

1) A bank investing in increasing account ownership experiences decline in bank capital as a result of the investment. Also, by reaching out to clients which were unbanked before, less profitable and riskier clients are attracted and served, causing a decline in the bank capital to assets ratio.
2) Access to financial services is increased by other FSPs than traditional banks. By being a strong competitor as well, the rise of other FSPs causes traditional banks to be less profitable.

Furthermore, the strong and positive correlation between 'Accessibility of financial services' and 'Easier to obtain credit' indicates that when account ownership increases, the number of people obtaining credit increases as well (Appendix E: Figure 26). Furthermore, 'More savings accumulated in an FSP account' is weakly correlated with 'Economic growth'. Also the weak and positive correlation of 'Economic growth' with 'Nutrition available' stands out. Lastly, the weak and negative correlation between 'Economic growth' and 'Basic health care available' is unsettling. Based on N = 26, an increase in GDP per capita PPP to some extent coexists with higher rates of maternal mortality in the same period (Appendix E: Figure 27). Comparing figure 10 with figure 9 reveals major differences in how economic growth and addressing basic needs are correlated. Where in general high economic growth rates coexist with higher levels of rural development, it seems that economic growth and rural development do not develop simultaneously.

Table 10. Part 1: CountryDifference cases. Values of the mentioned correlations

Variable (indicator)	Variable (indicator)	N	Sig.	R^2
Regressions between indicators of financial inclusion and indicators of outputs				
Accessibility of financial services (Account – Difference)	Greater bank stability (Bank capital - Difference)	14	0,002	0,581
Accessibility of financial services (Account – Difference)	Easier to obtain credit (Borrowed institution – Difference)	13	0,002	0,590
Regressions between indicators of outputs and indicators of outcomes				
More savings accumulated in an FSP account (Saved – Difference)	Economic growth (GDPpc – Difference)	26	0,005	0,290
Regressions between indicators of outcomes and indicators of rural development				
Economic growth (GDPpcPPP – Difference)	Nutrition available (Undernourishment - Difference)	24	0,017	0,233
Economic growth (GDPpcPPP – Difference)	Basic health care available (Maternal mortality – Difference)	26	0,003	0,317

Concluding, part 1 provided some intriguing findings. Analyses with CountryYear cases showed many significant and positive correlations between economic growth and both outputs of financial inclusion and rural development. This suggests economic growth is an important link between financial inclusion and rural development. Additionally, way less significant findings are found regarding CountryDifference cases than with CountryYear cases. This means there is reason to assume that economic growth does not coexist with increased outputs of financial inclusion nor rural development in the same period as economic growth increases.

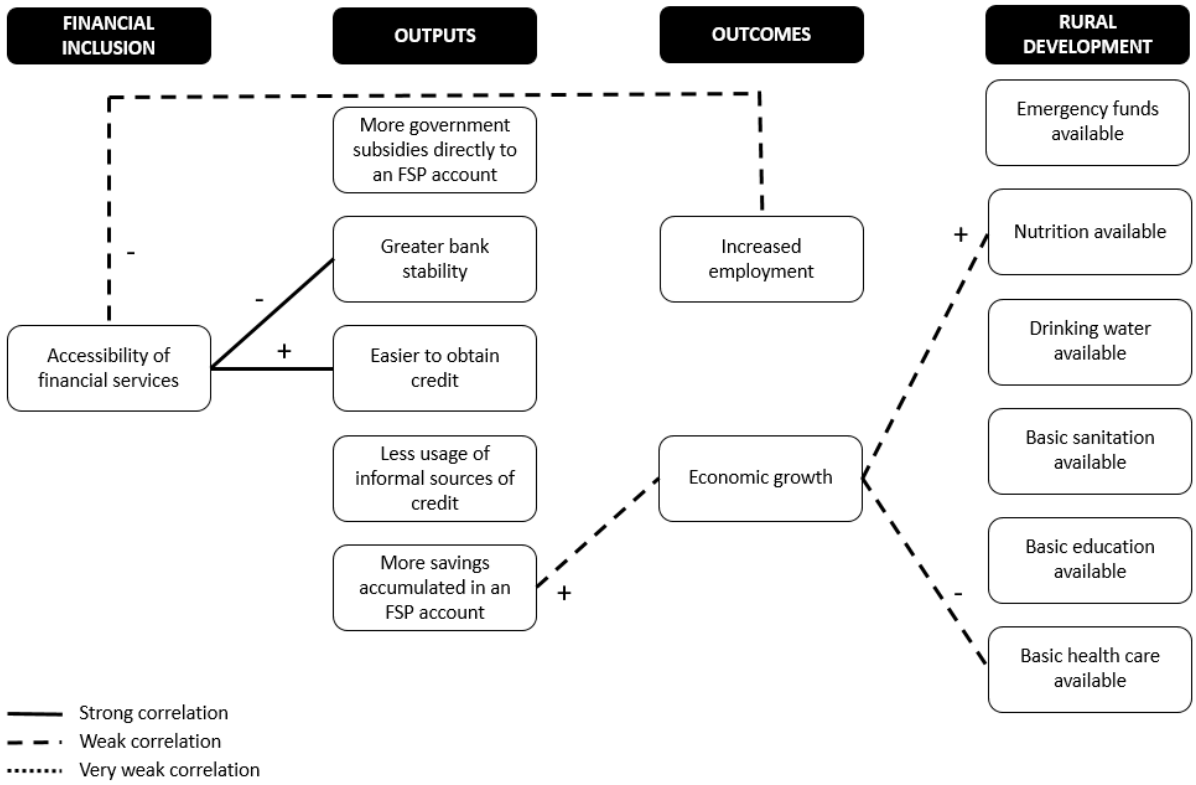

Figure 10. Results part 1 regarding CountryDifference cases, only significant findings (sig. < 0,05)

4.2 Data analysis, part 2: rural population

Part 2 adds a lot to the data analysis since it only includes data on the rural population specifically. Also, since selection criterion 3 does not apply to data analysis part 2, a much bigger N is available for part 2 than for part 1 and 3. A total of 126 countries are selected, which means for CountryYear cases N = 378 and for CountryDifference cases N = 252. Though, the N used per regressions is smaller since a regression can only include the cases of which data is available for both indicators of the regression. Not for every variable data per rural population is available. In practice, this means seven variables are analysed (Figure 7). Moreover, first, the regressions regarding CountryYear as case are discussed (Table 11), followed by the regressions regarding the CountryDifference cases (Table 12).

4.2.1 Data analysis part 2, CountryYear cases

Part 2 confirms an assumption based on the data analysed in part 1. Namely, the strong positive correlation between 'Accessibility of financial services' and both 'Easier to obtain credit' and 'More savings accumulated in an FSP account' is even clearer in part 2 (Appendix E: Figure 28; Figure 29).

Different than in part 1, part 2 is not able to analyse indicators on outcomes. Therefore, outputs of financial inclusion are analysed directly in relationship with the indicators of rural development. Since a large N and data on the rural population only is included, this still provides ground for some striking findings. Firstly, it is notable that 'Easier to obtain credit' is only very weakly correlated to 'Emergency funds available' (Appendix E: Figure 30). This implies credit is not available for the ones who would

use it to come up with emergency funds. A possible explanation is that credit may still not available for the ones on a very low income, while in general credit for the ones with higher incomes – who can provide certain collateral or credit history – is easier to obtain. Also, it would be reasonable to expect that more people would be able to come up with emergency funds when more savings are accumulated in an account. This, nor the opposite, is confirmed by the data because the correlation between 'More savings accumulated in an account' and 'Emergency funds available' is not significant.

Additionally, data analysis part 1 presented 'More savings accumulated in an account' is related to 'Drinking water available' and 'Basic sanitation available', namely via economic growth. On the contrary, while including a large N in part 2, it is clear that 'More savings accumulated in an account' is not directly related to 'Drinking water available' and 'Basic sanitation available'. This paves the way for the assumption that economic growth is the factor that relates to, on the one hand, contributing to more people accumulating savings and, on the other hand, contributing to better access to basic drink water and sanitation services.

Table 11. Part 2: CountryYear cases. Values of the mentioned correlations

Variable (indicator)	**Variable (indicator)**	**N**	**Sig.**	**R^2**
Regressions between indicators of financial inclusion and indicators of outputs				
Accessibility of financial services (Account, rural)	Easier to obtain credit (Borrowed institution, rural)	154	0,000	0,448
Accessibility of financial services (Account, rural)	More savings accumulated in an FSP account (Saved, rural)	234	0,000	0,541
Regressions between indicators of outputs and indicators of rural development				
Easier to obtain credit (Borrowed institution, rural)	Emergency funds available (No emergency funds, rural)	154	0,000	0,081
More savings accumulated in an account (Saved, rural)	Emergency funds available (No emergency funds, rural)	154	0,607	0,002
More savings accumulated in an account (Saved, rural)	Drinking water available (Drinking water, rural)	228	0,000	0,089
More savings accumulated in an account (Saved, rural)	Basic sanitation available (Sanitation, rural)	228	0,000	0,080

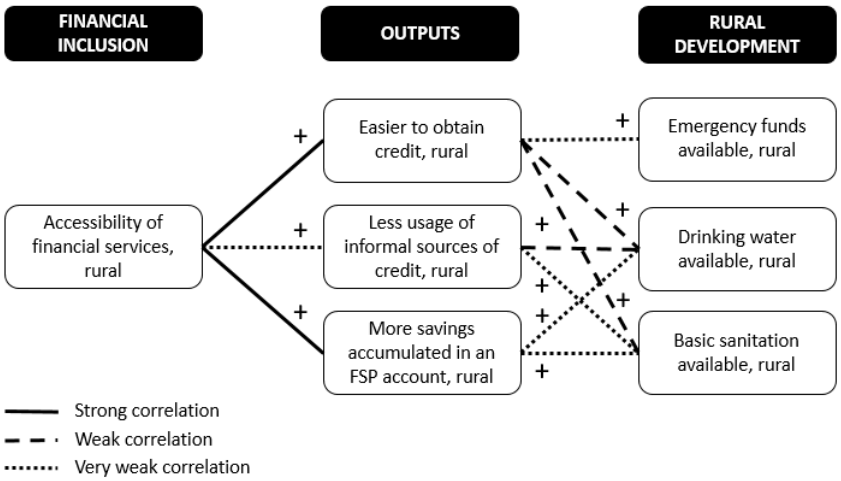

Figure 11. Results part 2 regarding CountryYear cases, only significant findings (sig. < 0,05)

4.2.2 Data analysis part 2, CountryDifference cases

When analysing the CountryDifference cases, some extra conclusions can be drawn. Similar to the previous paragraph, only regressions resulting in Sig. < 0,05 are taken into account (Figure 12).

The analysis regarding part 2 CountryYear cases explained that the relationship between 'More savings accumulated in an account' and 'Emergency funds available' could not be indicated since a significant result was lacking. Though, the analysis with CountryDifference cases resulted in significant correlations of all three outputs with 'Emergency funds available'. Since every correlation is very weak, the results indicate the percentage of people being able to come up with emergency funds is neither contributed to by 'Easier to obtain credit', 'Less usage of informal sources of credit', nor 'More savings accumulated in an account'.

Moreover, based on the following findings causal relationship can be carefully suggested:

1. 'Accessibility of financial services' and 'Easier to obtain credit' are strongly correlated when using CountryYear cases (Appendix E: Figure 28) and weakly correlated when using CountryDifference cases (Appendix E: Figure 31).
2. 'Accessibility of financial services' and 'More savings accumulated in an account' are strongly correlated when using CountryYear cases (Appendix E: Figure 29) and weakly correlated when using CountryDifference cases (Appendix E: Figure 32)

Also, in general, the percentage of people having access to financial services is higher than the percentage of people obtaining credit or accumulating savings in an FSP account. This indicates that in the same period as access to financial services increase, the percentage of people obtaining credit and percentage of people accumulating savings (only) slowly increase. On the other hand, when a stable high level of account ownership is reached, in general, many people obtain credit and

accumulate savings. This argues for causal relationships: first, account ownership increases and afterwards the number of people obtaining credit and accumulating savings slowly increase.

Concluding, the data analyses of part 2 highlight the influence of economic growth on the results: while part 1 shows economic growth is a clear link between outputs of financial inclusion and rural development, part 2 clarified there is no strong relationship between the outputs and rural development directly. Also, the results of part 2 provide ground to carefully argue for two causal relationships: increased financial inclusion leading to 1) credit is easier to obtain and 2) more savings being accumulated. These causal relationships would not be surprising since the literature review described that owning an FSP account is the first step to increase usage of (more) financial services and these particular outputs address usage of financial services.

Table 12. Part 2: CountryDifference cases. Values of the mentioned correlations

Variable (indicator)	Variable (indicator)	N	Sig.	R^2
Regressions between indicators of financial inclusion and indicators of outputs				
Accessibility of financial services (Account, rural – Difference)	Easier to obtain credit (Borrowed institution, rural – Difference)	75	0,000	0,336
Regressions between indicators of outputs and indicators of rural development				
Easier to obtain credit (Borrowed institution, rural – Difference)	Emergency funds available (No emergency funds, rural - Difference)	75	0,009	0,089
Less usage of informal sources of credit (Borrowed informal, rural – Difference)	Emergency funds available (No emergency funds, rural - Difference)	75	0,089	0,040
More savings accumulated in an account (Saved, rural)	Emergency funds available (No emergency funds, rural - Difference)	75	0,001	0,149

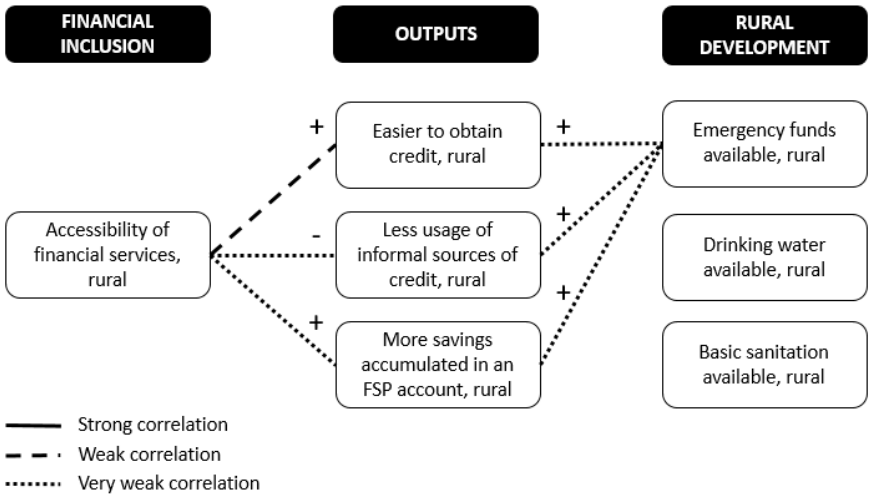

Figure 12. Results part 2 regarding CountryDifference cases, only significant findings (sig. < 0,05)

4.3 Data analysis, part 3: female rural population

The third part of the data analysis only uses national data concerning the female population. This paragraph provides a valuable addition to the analysis of the contribution of financial inclusion to rural development since the definition of rural development partly addresses the female (rural) population. Using data on the female population reflects the extent that financial inclusion can play a role in rural development for women in particular.

Different than data analysis part 1 and 2, part 3 uses an extra indicator next to account ownership: 'account ownership, gender gap'. The latter represents the difference in account ownership between men and women. This indicator is added to address the gender gap in financial inclusion as stressed by Demirguc-Kunt et al. (2018) in the literature review. Furthermore, data on the female population is available on the national level. To still be able to draw conclusions on the rural female population and exclude the influence of the urban female population as much as possible, the same case selection criteria apply as for part 1. Lastly, the female population is compared with the male population. The same indicators are used for the male population as for the female population, except for 'Maternal mortality' that only concerns women.

4.3.1 Data analysis part 3, CountryYear cases

The structure of this paragraph is similar to the previous paragraph. First, regressions regarding CountryYear cases are analyzed (N = 39; Table 13). Afterwards, the same counts for Country Difference cases (N = 26; Table 14). The results regarding female data compared with the results on male data.

There is a positive correlation between 'Accessibility of financial services' and 'More savings accumulated in an account' (R^2 = 0,600). Since in data analysis part 1 and part 2 the relationship between 'More savings accumulated in an account' and 'Economic growth' is addressed, this can be an interesting finding. To indicate whether women accumulating more savings strengthens women's position, additional regressions are performed. First, the same regression between 'Accessibility of financial services' and 'More savings accumulated in an account' is performed, this time using male data. This resulted in a similar R^2 value as when performing the regression with female data (R^2 = 0,566). Second, via regressions account ownership amongst women is compared with the gender gap in the outputs. This resulted in no significant finding and is left out of consideration. Therefore, based on CountryYear cases, women accumulating more savings did not lead to a more empowered position of women.

Regarding the outputs, 'Easier to obtain credit' and 'Less usage of informal sources of credit' both are positively correlated with 'Basic education available' (Figure 13). This could suggest there is a pattern on families enabling their girls to go to school when credit is available and informal sources of credit

are used less. The role of 'Less usage of informal sources of credit' is especially interesting, since the correlation with 'Basic education available' is strong regarding female data (R^2 = 0,425) and weak regarding male data (R^2 = 0,387) (Appendix E: Figure 33; Figure 34).

Furthermore, concerning the correlation between 'Less usage of informal sources of credit' and 'Increased employment', female data result in a strong negative correlation (R^2 = 0,447) and male data produce a weak negative correlation (R^2 = 0,229) (Figure 13; Figure 14; Appendix E: Figure 35; Figure 36). The difference between the strength of the correlation cannot be ignored. A possible explanation is that women more often find themselves providing informal credit to other women. Thus, when employment amongst women increases, usage of informal sources of credit amongst women increases to a bigger extent than usage amongst men.

Lastly, 'Maternal mortality' is a variable for women – and not for men – since it addresses women only. Including this variable lead to several significant findings:

1) the strong correlation between 'Less usage of informal sources of credit' and 'Maternal mortality',
2) the weak correlation between 'Easier to obtain credit' and 'Maternal mortality', and
3) two weak correlations between 'Increased employment' and 'Maternal mortality'.

The first mentioned finding stands out since it concerns a strong correlation. A possible explanation can be that higher levels of maternal mortality put many families in emotional and financial issues. Financial issues can occur since the loss of a mother means there is one adult less to take care of the children she leaves behind. Possibly, this puts pressure on female family members to take care of these children resulting in more usage of informal sources of credit amongst these women. It goes without saying that low levels of maternal mortality could cause the opposite: less usage of informal sources of credit.

The correlations between 'Increased employment' and 'Maternal mortality' show an interesting pattern: the correlation with indicator 'Employment, female' is negative (R^2 = 0,367) and the correlation with indicator 'Employment, gender gap' is positive (R^2 = 0,264). This suggests higher employment rates amongst women coexist with higher rates of maternal mortality, while more equal employment opportunities coexist with lower rates of maternal mortality. Although causal claims cannot be substantiated by the data, a possible explanation of the negative correlation is that when more young mother pass way, more children are orphan at a young age. When the orphans are raised by family members, adults must provide for more children. Possibly, this urges more women to take on a paid job.

Both possible explanations take into account that countries included in data analysis part 3 have at least a rural population of 60%. This means the cases included are most likely to be the least developed economies, compared to other emerging and developing economies.

Table 13. Part 3: CountryYear cases. Values of the mentioned correlations

Variable (indicator)	Variable (indicator)	N	Sig.	R^2
Regressions between indicators of financial inclusion and indicators of outputs				
Accessibility of financial services (Account, female)	More savings accumulated in an account (Saved, female)	39	0,000	0,600
Accessibility of financial services (Account, male)	More savings accumulated in an account (Saved, male)	39	0,000	0,566
Regressions between indicators of outputs and indicators of outcomes				
Less usage of informal sources of credit (Borrowed informal, female)	Increased employment (Employment, female)	29	0,000	0,447
Less usage of informal sources of credit (Borrowed informal, male)	Increased employment (Employment, male)	39	0,002	0,229
Regressions between indicators of outputs and indicators of				
Easier to obtain credit (Borrowed institution, female)	Basic education available (Education, female)	26	0,005	0,290
Easier to obtain credit (Borrowed institution, female)	Low levels of maternal mortality (Maternal mortality)	26	0,004	0,292
Less usage of informal sources of credit (Borrowed informal, female)	Basic education available (Education, female)	39	0,000	0,425
Less usage of informal sources of credit (Borrowed informal, male)	Basic education available (Education, male)	39	0,000	0,387
Less usage of informal sources of credit (Borrowed informal, female)	Low levels of maternal mortality (Maternal mortality)	29	0,000	0,451
Increased employment (Employment, female)	Low levels of maternal mortality (Maternal mortality)	39	0,000	0,367
Increased employment (Employment, gender gap)	Low levels of maternal mortality (Maternal mortality)	39	0,001	0,264

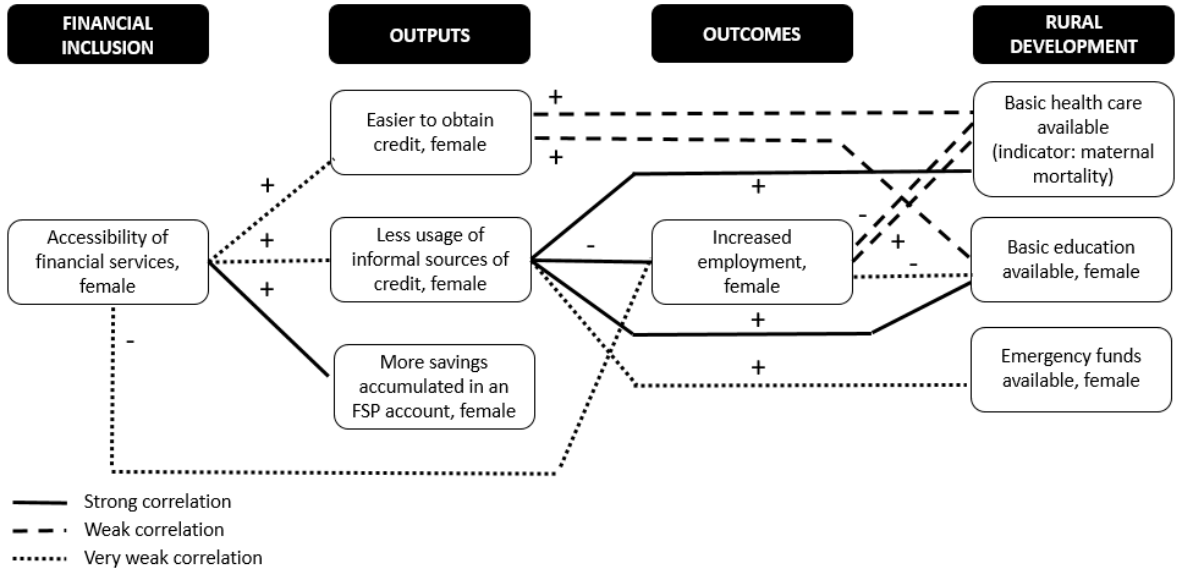

Figure 13. Results part 3 regarding CountryYear cases, female data, only significant findings (sig. < 0,05)

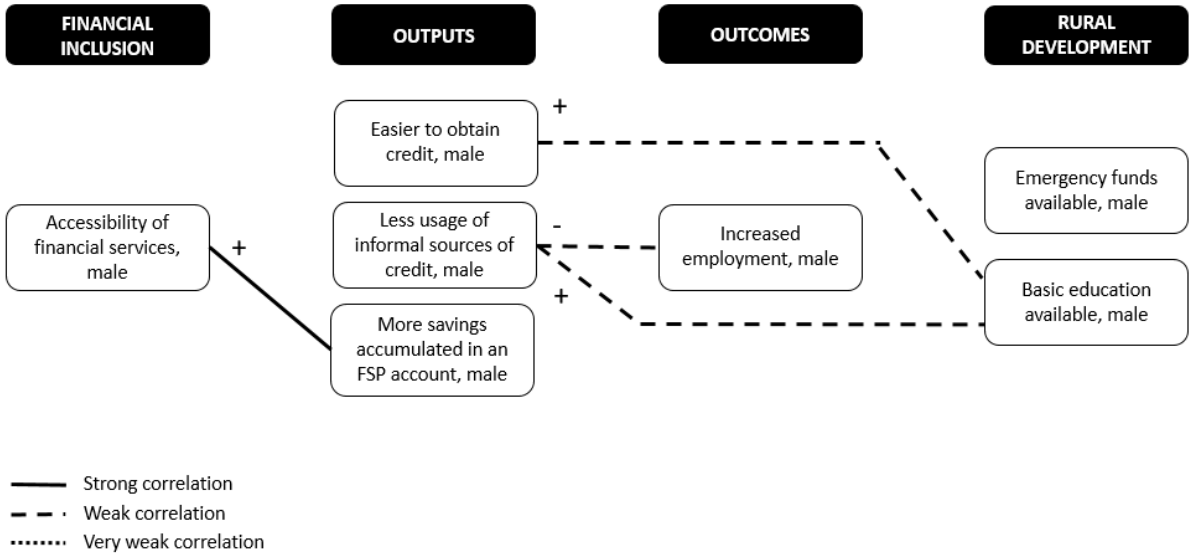

Figure 14. Results part 3 regarding CountryYear cases, male data, only significant findings (sig. < 0,05)

4.3.2 Data analysis part 3, CountryDifference cases

This paragraph continues with the findings of linear regressions regarding the CountryDifference cases. Similar to the previous analysis, only regression with N ≥ 10 and resulting in Sig. < 0,05 are taken into consideration (Figure 15; Figure 16).

The first finding worth mentioning is an impressive one. Concerning the female data, 'Easier to obtain credit' and 'Increased employment' (Indicator: Employment, gender gap – Difference) resulted in a weak correlation (Appendix E: Figure 37). Regarding this regression, a weak correlation is impressive

since the latter indicator has a low standard deviation (1,86). This suggests that the more women obtain credit, the smaller the gender gap in employment. This could suggest being employed gives women better chances to attract loans. Also, the correlation can be caused by greater access to credit amongst women which in turn leads to more women being able to be self-employed.

When comparing the results regarding female data and male data some differences are notable. Firstly, 'Accessibility of financial services' and 'More savings accumulated in an account' resulted in a very weak correlation regarding female data (R^2 = 0,198) and a weak one regarding male data (R^2 = 0,209). Since the difference in R^2 value is that little, the difference in the result is left out of consideration. The second difference is found in the surprisingly negative correlation between 'More savings accumulated in an account' and 'Basic education available': regarding women, this correlation is strong (R^2 = 0,440) while for men this correlation is weak (R^2 = 0,163) (Appendix E: Figure 38; Figure 39). The striking difference in the value of R^2 indicates more savings coexist with fewer girls attending basic education. Although this is hard to explain based on the available data, two possible explanations are 1) when children are not in school, they help generate incomes for the family which could cause savings to increase, and 2) children attending school is that costly for rural families that savings cannot be accumulated at the same time. The difference between boys and girls suggests that boys are more likely to attend education disregarding the circumstances and girls being likely to attend education only if their parents can and want to carry the financial costs.

Table 14. Part 3: CountryDifference cases. Values of the mentioned correlations

Variable (indicator)	Variable (indicator)	N	Sig.	R^2
Regressions between indicators of financial inclusion and indicators of outputs				
Accessibility of financial services (Account, female – Difference)	More savings accumulated in an account (Saved, female – Difference)	38	0,005	0,198
Accessibility of financial services (Account, male – Difference)	More savings accumulated in an account (Saved, male – Difference)	38	0,004	0,209
Regressions between indicators of outputs and indicators of outcomes				
Easier to obtain credit (Borrowed institution, female – Difference)	Increased employment (Employment, gender gap – Difference)	14	0,041	0,305
Regressions between indicators of outputs and indicators of				
More savings accumulated in an account (Saved, female - Difference)	Basic education available (Education, female – Difference)	26	0,000	0,440
More savings accumulated in an account (Saved, male - Difference)	Basic education available (Education, male – Difference)	26	0,041	0,163

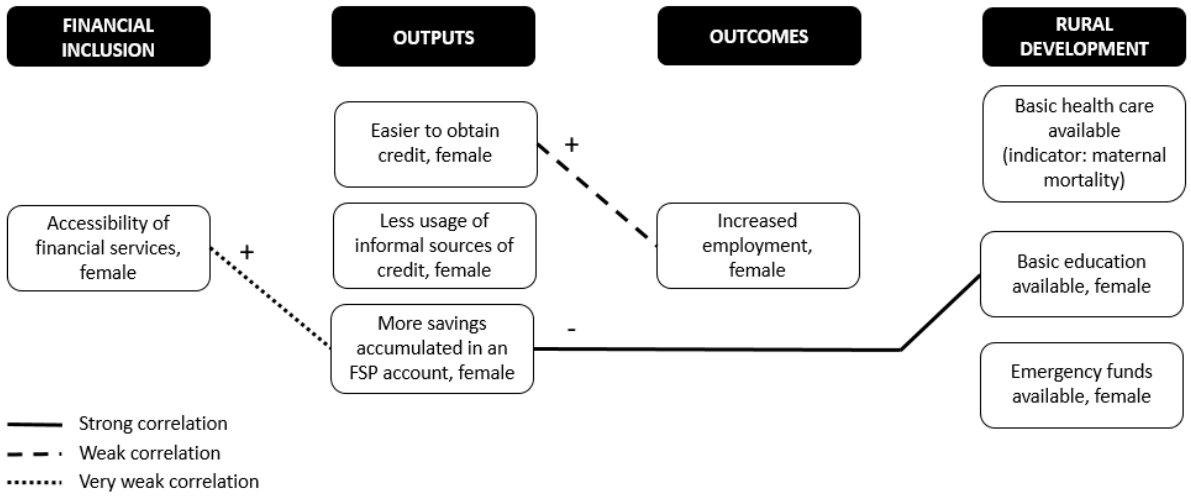

Figure 15. Results part 3 regarding CountryDifference cases, female data, only significant findings (sig. < 0,05)

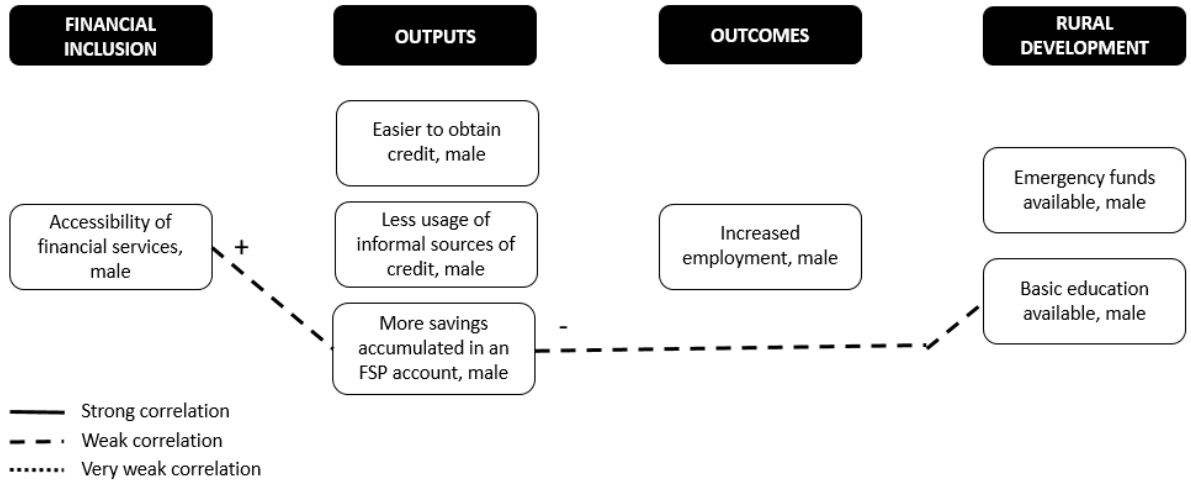

Figure 16. Results part 3 regarding CountryDifference cases, male data, only significant findings (sig. < 0,05)

Concluding, financial inclusion could contribute to women's position in two ways. The first is via increased savings in an FSP account. Based on CountryYear cases, part 3 showed women tend to accumulate more savings than men when financial inclusion increases. Additionally, data analysis part 1 and part 2 showed increased savings is an important factor since it is related to economic growth. It has to be stated that part 3 showed more savings coexist with fewer girls attending basic education. This weakens the argument that increased savings contribute to addressing basic needs. Possibly, building on the conclusion that economic growth plays a crucial role, financial inclusion could improve the female position only when it is converted into economic growth. The second way that financial inclusion could contribute to women's position is based on the analysis of CountryDifference cases. The latter showed an increase in women obtaining credit coexists with a simultaneous decrease in the employment gender gap. When increased access to credit allows more women to be self-employed, financial inclusion can contribute to the female position by enabling women to obtain credit.

5. Answers to the sub-questions

Building on the data analysis, the sub-questions are answered in this chapter. Based on the answers to the sub-questions, in the conclusion an answer to the main research question is given.

5.1 Financial inclusion's contribution to rural development

The data analyses provided valuable insights required to answer the first sub-question in this paragraph. Repeating the introduction, sub-question 1 reads as follows: 'To what extent does financial inclusion in rural areas, in selected cases of emerging and developing economies, contribute to rural development?'

To answer this question, a theoretical framework is developed. Building on the data analysis, figure 17 summarizes and visualizes the parts of the theoretical framework as backed by the data.

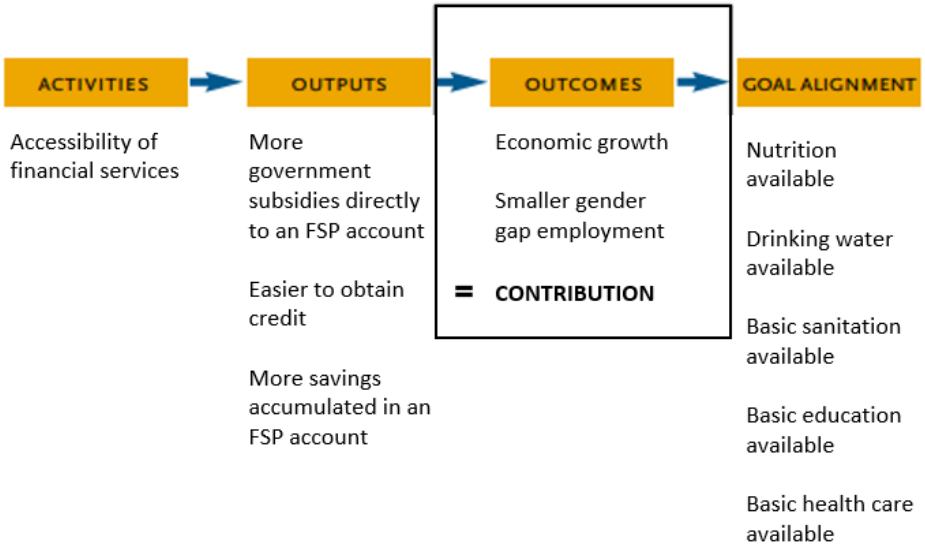

Figure 17. The theoretical framework as backed by the data

Furthermore, the data analysis revealed some notable findings contributing to answering the first sub-question. Firstly, based on the following, financial inclusion and economic growth are strongly related:

1) The direct correlation between access to financial services and economic growth is strong.
2) Financial inclusion is strongly related to obtained credit and accumulated savings. In turn, obtained credit and accumulated savings both strongly relate to economic growth. This indicates an indirect relationship between financial inclusion and economic growth.

Due to the chosen research design, causal claims cannot be substantiated based on these findings. Conceivably, financial inclusion and economic growth develop simultaneously while contributing to each other. For instance, this can happen via an increase in credit being obtained (Figure 18). Easier to obtain credit can both be a result of increased financial inclusion as of increased economic growth, which increases people's credibility to repay a loan. As a result, easier to obtain credit can lead to

more usage of this particular financial product – and thus increase financial inclusion – as well as economic growth when the credit is invested to increase economic activities.

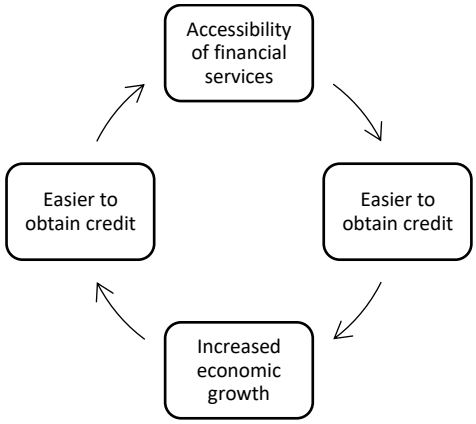

Figure 18. Example of how financial inclusion and economic growth develop simultaneously

Secondly, financial inclusion can contribute to rural development to some extent. This does not happen directly since outputs of financial inclusion are not strongly related to rural development (Data analysis part 2: Figure 11; Figure 12). Financial inclusion's contribution to rural development is indirect as financial inclusion is strongly related to economic growth and, in turn, economic growth is strongly related to rural development. In addition, although economic growth and rural development strongly coexist (CountryYear cases; Figure 9), they do not develop simultaneously: the connection is very weak when analyzing data on the difference in a timespan of three years (CountryDifference cases; Figure 10). This can be explained by rural development as a long term effect of increased economic growth, which is not measurable in the same period as economic growth increases.

In sharp contrast with increased economic growth, employment seems to play no role in financial inclusion's contribution to rural development: often there is either no or a negative correlation between outputs of financial inclusion and employment, and between employment and rural development. Since economic growth refers to national development and causes governments to handle bigger budgets, it seems that rural development is something to be addressed by governments on the national level and should not be entrusted to the idea that companies, by employing people, directly contribute to rural development.

The only positive relationship between employment and financial inclusion shows that better access to credit amongst women comes with more equal employment opportunities. As mentioned before, this thesis analyzes correlations and therefore causal relations cannot be indicated. This means two possible explanations can be given and one explanation does not exclude the other:

1) When credit gets easier to obtain, more women can start their own business and be self-employed.
2) Being employed makes it easier to obtain a formal loan.

5.1.1 Alternative explanations

Some alternative explanations are in place while discussing the findings used to answer sub-question 2. The literature review introduced two alternative explanations of the findings in case the results would confirm the theoretical expectations:

1) Financial inclusion does not contribute to rural development but rural development contributes to financial inclusion. In this case, not financial inclusion but rural development must be boosted with other tools than financial inclusion.

   Since causal relationships cannot be indicated by the data, this alternative explanation cannot be rejected. Though, this thesis suggests that a strong relationship between concepts means the two contribute to each other. Therefore, it would not be right to only boost rural development without a focus on tools such as financial inclusion.

2) External conditions – which allow financial inclusion to increase – cause identified outputs, outcomes and rural developments to evolve independently. When this is the case, the strong correlation between – for instance – economic growth and rural development are not caused by an interaction between the two, but by both benefiting from the same favorable external conditions.

   As favorable conditions, the literature review mentioned good governance and long term peace. Countries in war are excluded from this study via inclusion criterion 2, but the level of good governance logically varies amongst the included countries. This allows the possibility that good governance as an external factor influences the results. Still, if good governance causes increased financial inclusion, economic growth and rural development, it is remarkable that employment has not increased at a similar extent.

The latter could indicate the following. Possibly, economic growth (represented by GDP growth) is not caused by broad economic activity but caused by industries where the rural population is not involved in. For instance, the oil industry. The wealth such industries create is often not distributed equally (Davies et al., 2016): a small, already wealthy part of the population benefits the most, while also governments gain more income via taxes derived from the industries. Consequently, governments have a bigger budget to invest in financial inclusion and access to basic needs, for instance, by improving sanitation services in remote areas. Although a government creates employment by

ordering people to build sanitation services, in these situations employment has not increased to a great extent since the industries causing the economic growth do not increase employment amongst the poor. In other words, there is no more market activity than before the GDP grew. The explanation as just described can also be backed by the findings that economic growth and rural development do not develop simultaneously and the interpretation that rural development is only a long term effect of economic growth, namely when economic growth – on the long term – allow governments to invest in basic needs.

5.2 Financial inclusion's contribution to the SDGs

Sub-question 2 is formulated as: 'To what extent does financial inclusion directly or indirectly contribute to Sustainable Development Goals in selected cases of emerging and developing economies?' To answer this question, the variable used to indicate financial inclusion and the outputs and outcomes (Figure 17) are compared with the SDGs (Table 15). Since sub-question 2 addresses financial inclusion's direct and indirect contributions, this concerns only financial inclusion and its outputs and outcomes. Rural development and its variables are left out of consideration.

Financial inclusion directly contributes to SDGs connected to 'Accessibility of financial services'. This concerns two SDGs:

1) SDG 1 'No poverty' as sub-SDG 1.4 addresses access to basic financial services.
2) SDG 5 'Gender equality'. When financial inclusion amongst women increases, financial inclusion contributes sub-SDG 5.a which focusses on equal access to financial services.

Furthermore, several investigated outputs are connected to an SDG. The first is the output 'Providing subsidies directly to the beneficiary FSP account' which is connected to SDG 1 'No poverty' as sub-SDG 1.3 refers to "nationally appropriate social protection systems" (Table 15). Providing subsidies directly to the beneficiary account contributes to appropriate social protection systems since this is a safe way to transfer and receive money (Khan, 2011; Muralidhar et al., 2019; Sarma & Pais, 2010). In practice, this means a great reduce of corruption. On other words, more funds meant for the poor population do indeed reach the poor population. For instance, in India, the leakage of funds for pension payments dropped by 47 percent when the payments were not handed out in cash anymore (Demirguc-Kunt et al., 2018, p. 2). Since the data confirmed financial inclusion leads to more subsidies provided to the beneficiary FSP account – instead of using other payment methods – financial inclusion contributes to SDG 1 'No poverty'. The second output connected to an SDG is 'Greater bank stability'. This output is connected to SDG 8 'Decent work and economic growth' via sub-SDG 8.10: "Strengthen the capacity of domestic financial institutions(…)" (Table 15). Financial inclusion does not seem to contribute to greater bank stability and thus, financial inclusion does not seem to contribute to sub-SDG 8.10.

The outcomes of financial inclusion analyzed with data are economic growth and employment. Firstly, this thesis concluded financial inclusion and increased economic growth both contribute to each other to some extent. Therefore, by contributing to economic growth, financial inclusion contributes to SDG 8 'Decent work and economic growth' (Sub-SDG 8.1, Table 15). Secondly, financial inclusion is only once positively related to increased employment: more usage of credit amongst women coexists with a decreased employment gender gap coexists with increased usage of credit amongst women. The latter indicates greater economic inclusion of women and this is described by sub-SDG 10.2. Therefore, via increased usage of credit amongst women, financial inclusion contributes to SDG 10 'Reduce inequality'.

Table 15. SDGs in comparison with financial inclusion and its outputs and outcomes

SDG	Specific sub-SDG (United Nations, 2019a)	Possibly contributed to via	Contribution supported by data
SDG 1. No poverty	1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services (…) and financial services, including microfinance	Accessibility of financial services	Yes
	1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	More government subsidies being paid out directly to FSP accounts	Yes
SDG 5. Gender equality	5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, (…)	Accessibility of financial services: female	Yes
SDG 8. Decent work and economic growth	8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	Economic growth	Yes
	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Employment	No
	8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all	Increased bank stability	No
SDG 10. Reduce inequality	10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status	Employment: decreased gender gap	Yes

6. Conclusion and discussion

In this thesis, a cross-sectional study is performed using secondary quantitative data and correlations in order to answer a descriptive main research question: 'How can financial inclusion be used as a tool to contribute to rural development and to achieving the UN Sustainable Development Goals?' In this chapter, this main research question is answered. This chapter also reads the scientific and societal relevance of the provided new insights. Lastly, the strengths, weaknesses and recommendations are discussed to provide tools to further elaborate on the most important findings in future research.

6.1 Answer to the main research question

First, this paragraph explains what theoretical expectations are confirmed by the data. Afterwards, the results are critically assessed in light with the literature review and contemporary global trends.

6.1.1 Reviewing the theoretical expectations

In answering the research question, this thesis concluded the data only partly support the theoretical expectations. The most important findings that confirm the theoretical framework are:

1) There is a strong direct connection between financial inclusion and economic growth which means they develop simultaneously while contributing to each other. Also, the two interact via the outputs of financial inclusion: both financial inclusion and economic growth contribute to 'More savings accumulated in an account' and 'Easier to obtain credit' and these outputs in turn contribute to both financial inclusion and economic growth.
2) There is a strong relationship between economic growth and rural development. This thesis highlighted economic growth contributes to the availability to almost all researched basic needs. Notably, some basic needs became more available even during the same period as economic growth increased.

Of all the outputs, financial inclusion only has a strong and positive relationship with 'Easier to obtain credit' and 'More savings accumulated in an account'. Besides, of these two outputs, only 'More savings accumulated' had a strong and positive correlation with an outcome, namely 'Economic growth'. Furthermore, while 'Economic growth' was strongly related with rural development, 'Employment' never resulted in a strong relationship with any indicator of rural development. The thesis also presented some findings contradicting the theory:

1) Bank stability decreased when financial inclusion increases. This could be caused by banks investing to improve financial inclusion and thus be less stable, or by online FSPs being the force behind increased financial inclusion while they also are a strong competitor of traditional banks, causing traditional banks to be less stable.

2) A higher percentage of government subsidies being paid out to FSP accounts – as a percentage of all government subsidies paid out – coexists with economic decline. Possibly, governments aim for more effective ways to provide social benefit funds in times of economic decline.
3) Increased employment coexist with more usage of informal sources of credit. It seems that the more people are employed, the more people provide informal credit to others. This finding is further elaborated later in this paragraph, regarding the role of employment.

As elaborated in the previous chapter, contributions to the SDGs are mainly accomplished via increasing access to financial services (amongst women) and financial inclusion's contribution to economic growth and decreasing the employment gender gap. The SDGs financial inclusion, directly and indirectly, contributes to are presented below.

Figure 19. SDGs directly or indirectly contributed to by financial inclusion

6.1.2 The role of economic growth

The results showed a strong connection between financial inclusion and economic growth which means they develop simultaneously while contributing to each other. Though, it is too early to conclude that financial inclusion contributes to rural development when it is applied to increase economic growth. First, the findings should be moderated in light with the literature review and contemporary global trends.

A broad literature review is devoted to identifying four determinants of rural development (Appendix A) but two of them have not been touched in this thesis: 'enabling environment' and 'availability of natural resources'. In light of the results that imply economic growth is the link to rural development, considering the importance of 'availability of natural resources' is in particular important as natural resources decline under unsustainable economic growth. This means that to reach real rural development – and thus consider the availability of natural resources – economic growth can only contribute to rural development when this is sustainable economic growth.

Also in light with global trends, the results regarding economic growth should be moderated when considering the availability of natural resources. Many economic and political structures are built upon the idea of endless growth (Higgs, 2015; Kopnina & Washington, 2018). After five centuries of the industrial revolution, enlightenment science, European colonialism and the rise of capitalism, growth became the "commonsense" solution to practically all our problems (Higgs, 2015, p. 17; 18). Although

the lust for growth allowed the vast majority of the population of (currently) developed countries to meet their basic needs, it cannot be ignored that this came with the great environmental cost. It would be wrong to choose the same path to address people's basic needs when this path has proven to come with great environmental degradation (the plastic soup in oceans, greenhouse gas emissions, overconsumption, etc.) which has its ecological limits (Abbing, 2018; Erickson & Brase, 2019; Kopnina & Washington, 2018, p. 57). Therefore, also in light with global trends, only sustainable economic growth can only be interpreted as a tool for rural development.

When concluding upon how financial inclusion can be used as a tool to achieve the SDGs, this thesis argues that financial inclusion can only be used when it contributes sustainably. Financial inclusion could hurt the achievement of the SDGs when it contributes to unsustainable economic growth. To be more specific, unsustainable economic growth puts pressure on the SDGs presented in figure 20. Please see Appendix F for the reasoning behind this.

Figure 20. SDGs negatively affected by unsustainable economic growth

In respect to the broader perspective concerning CSR, the introduction mentioned the need for a basic structure to allow collective responsibility work going beyond (unsustainable) economic rationality (Mäkinen & Kourula, 2012). Based on how this thesis used the SDG framework to critically assess the contributions of financial inclusion, this thesis argues that the SDG framework is the desired basic structure allowing collective responsibility work in CSR.

Consequently, for tools such as financial inclusion to contribute to rural development and the SDGs, a broad and ongoing implementation of the SDGs is needed to globally unite companies, governments and institutions for sustainable development. The ongoing implementation of the SDGs should be encouraged via strong international cooperation, although this can be tough. In a political climate with a resurgence of nationalist politics and an unstable international order, international cooperation is increasingly challenged (Cooley & Nexon, 2020). A decline in international support for achieving sustainability goals is already visible, for instance, by the USA withdrawing from the Paris Agreement

(Holden, 2019). To achieve sustainable development, create a basic structure for contemporary CSR and achieve the SDGs, international cooperation must be protected and strengthened. Only in such a political climate, efforts like increasing financial inclusion can effectively contribute to sustainable rural development and to achieving all SDGs.

6.1.3 The role of employment

Via employment, financial inclusion has a very limited contribution to rural development and the SDGs. The contrast with economic growth is striking since employment is not related to financial inclusion or its outputs, nor is it related to rural development. This is extra surprising considering rural development's definitions addresses people's ability to meet their basic needs. Why are financial inclusion and employment only weakly related, and why does increased employment not contribute to – for instance – less malnutrition?

The one positive relationship between financial inclusion and employment is found in increased access to credit amongst women, which comes with a smaller gender gap in employment. This finding could mean that increased access to credit causes more women to start their own business, or being employed makes it easier to obtain a formal loan. This thesis assumes both explanations are accurate.

The findings show that higher employment rates do not lead to more people meeting their basic needs. Two possible explanations for this are the following:

1) Although people are employed, wages are that low that people still struggle to meet their basic needs. This could mean that employed people are exploited. When corporate organizations contribute to exploitation, this is an example of where a basic structure for collective responsibility work for CSR is missing and where greater implementation of the SDGs would be appropriate, especially SDG 8 'Decent jobs and economic growth'.
2) Although people are employed, whether they meet their basic needs does not depend upon their personal financial wealth. It rather depends upon the wealth of governments. When the latter is combined with good governance, sanitation and drinking water services can be built and maintained. This is based on the findings that national economic growth is strongly related to people meeting their basic needs and increased employment is not. The importance of good governance is also stressed by SDG 16 'Peace, justice, and strong institutions'.

Another finding that contradicts the theory is that higher employment rates negatively affect financial inclusion by increasing the usage of informal sources of credit. This counts for both men and women, although the negative effect is stronger amongst women. This can be explained by the more people earning wages, the more people become the informal credit provider. Based on this, two conclusions can be drawn:

1) Of the two explanations on why employment does not contribute to people's ability to meet their basic needs, as just listed, the second is more probable. The reasoning behind this is that employed people seem to earn enough money to loan some of it to others. Therefore, the first explanation – on that people are exploited when employed – is less probable.
2) The classical liberalism point of view seems not applicable to rural areas of emerging and developing economies. According to classical liberals, individuals are "egoistic, coldly calculating, essentially inert and atomistic" (Hunt, 2002, p. 44). Adopting this idea, it is believed that employment causes higher incomes which an individual would use to improve their personal living conditions. Instead, earned money is lent to others which once again puts the wage earner in a vulnerable position. Relating this finding to contemporary CSR, also this conclusion argues for a new form of CSR that moves away from classical liberal views.

6.1.4 Filling the knowledge gap

At the start is of research, it was unclear whether financial inclusion in rural areas of emerging and developing economies is a tool to improve rural standards of living. This thesis clarified that financial inclusion can be a tool to improve rural standards of living when it is applied in the following ways:

1) In a system where financial inclusion and economic growth develop simultaneously and contribute to each other, financial inclusion contributes to rural development since economic growth is one of the four determinants of rural development (Appendix A).
2) Financial inclusion can contribute to more equal employment opportunities for women by increasing access to credit.
3) By financially including small rural enterprises – and people planning on starting one – rural economic opportunities increase and thus rural development is contributed to. This conclusion is based on two findings:
    a. economic growth is an important link between financial inclusion and rural development, and
    b. increased usage of credit coexists with more equal employment opportunities, suggesting better access to credit allows more people to start a business.

6.2 Relevance of the new insights

The relevance of the insights is divided into scientific and social relevance. Scientific relevance is found in the following (Figure 21):

1) This thesis contributed to the discussion on whether the poor population directly benefits from financial inclusion. By addressing rural development by people's ability to meet their basic needs, this thesis presented a strong connection between economic growth – and the

strongly connected financial inclusion – and the poor population's ability to improve their standard of living.

2) This thesis contributed to shaping a contemporary interpretation of CSR. The thesis showed that the SDGs are suitable for providing a basic structure for collective responsibility work. Also, this thesis suggested that companies alone cannot bear the responsibility for achieving sustainable rural development. Good governance of highly important as well.

Societal relevance is found in the following topics:

1) This thesis clarified the role of FSPs in achieving both rural development and SDGs. The thesis showed to the FSPs via which financial services societal value can be created so that FSPs can take moral responsibility for this. Moreover, this thesis stresses the role of policymakers by underlining that companies alone cannot create rural development and achieve all SDGs. Good governance is needed to translate economic growth in substantial improvement of rural living conditions.
2) As the SDGs are a promising framework to achieve global collaboration on sustainable development, this thesis provides an example of how organizations can operationalize and monitor contributions to SDGs.

By approaching rural development as a combination of four determinants (Appendix A), this thesis stresses real rural development is more than economic development. Building on the broad interpretation of development – which acknowledges the importance of the availability of natural resources – this thesis challenges the society and academics to further imbed sustainability in their way of working to accomplish sustainable development and prevent unsustainable economic growth to repeat itself.

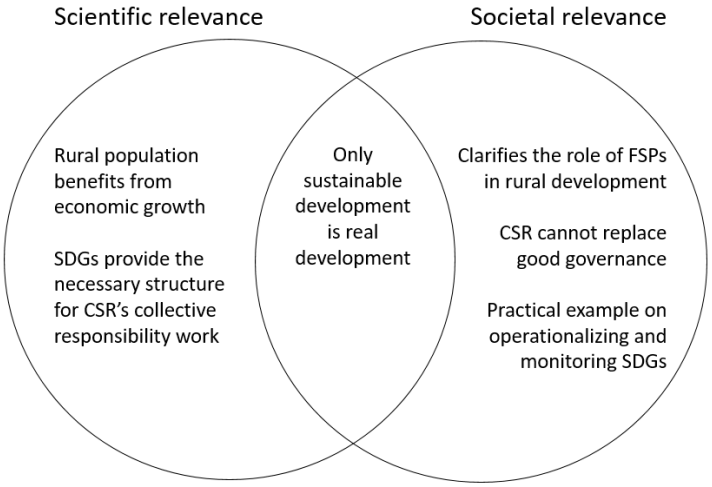

Figure 21. Overview of this thesis's scientific and societal relevance

6.3 Strengths, weaknesses and recommendations

This thesis has its strengths and weaknesses. Too in the future elaborate on its strengths and counteract its weaknesses, three recommendations for further research are provided.

A strength of this research is that it analyzed data on as many countries as possible, following the case selection criteria. By choosing a descriptive approach of financial inclusion's contribution in a setting as not researched before, this thesis paved the way for future research into the most remarkable findings. For future research, firstly, it is recommended to zoom in on these remarkable findings:

1) The limited role of employment in contributing to people's ability to meet their basic needs. Is this caused by the exploitation of the rural employed population? What role does CSR play in converting increased employment into increased ability to meet the basic needs?
2) The outstanding role of economic growth in how financial inclusion contributes to rural development. While this thesis only used the percentage of people owning an FSP account to indicate the level of financial inclusion, it is recommended to investigate the impact of financial inclusion of (small) rural enterprises and analyze whether this is a powerful tool to boost sustainable economic growth. Such a study would fit in the SDG framework as well since SDG 8 'Decent work and economic growth' and SDG 9 'Industry, innovation and infrastructure' address financially including micro-, small- and medium-sized enterprises. Performing a study in line with the SDGs is recommended since this thesis showed the SDG framework is suitable to globally unite companies, governments and institutions for sustainable development.

Another strength is to be found in the conceptualization of rural development. By acknowledging real rural development is a combination of four determinants (Appendix A), this thesis was able to critically assess the role of economic growth. Still, it is a weakness that the role of enabling environment and availability of natural resources has not been researched in this study. To paint the complete picture of how financial inclusion contributes to rural development, the following is recommended:

3) Research the role of 'enabling environment' and 'availability of natural resources' in financial inclusion's contribution to rural development. Financial inclusion is expected to positively contribute to an enabling environment by increasing access to services and it is expected to negatively contribute to the availability of natural resources via unsustainable economic growth. Additionally, it is recommended to study the role of an enabling environment – with a focus on good governance – in how economic growth relates to people's ability to meet their basic needs. Relative SDGs of 'Enabling environment' are SDG 9 'Industry, innovation, and infrastructure' and SDG 16 'Peace, justice and strong institutions'. SDG 12 'Responsible consumption and production' is relevant for 'Availability of natural resources'.

A third strength is that all variables are based on a broad literature review. Though, a weakness is that not all identified variables could have been researched due to dependency on secondary data. Therefore, possibly, some interesting relationships are left unnoticed. Also, it is unfortunate that data on the GINI index – indicating how equal wealth is distributed (The World Bank, 2020c) – was insufficiently available. If the GINI index could have been used, this would have indicated the extent that the disadvantaged part of the population would benefit from economic growth. This would provide insights into the relationship between economic growth and people's ability to meet their basic needs. To research where the wealth generated from economic growth ends up, future research could analyze the contributions of differing sectors – such as agriculture or natural resources – to the national GDP.

To prevent dependency on secondary data, data could be collected by the researcher itself. Though, when performing similar studies which include many different countries and indicators as well, this is most likely too time-consuming and very difficult. Possibly, the World Bank can be requested to some indicators of interest to its standard survey, for instance to the survey providing data for the World Development Indicators database or the Global Financial Inclusion database. An important addition to the survey would be more extensively distinguishing between urban and rural areas. Although World Bank Open Data is perceived to be a credible source, in collecting their data the World Bank depends on local sources as well. Therefore, there still might be differences in how values are determined and this is likely to affect the extent that countries are comparable. Though, by including the analysis of difference over a timespan of three years, the negative effect of possible incomparability of data is excluded as much as possible.

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Appendix A. Determinants of rural development

Determinants of rural development are based on determinants identified by the World Bank (Hill et al., 2007, p. 469-481; World Bank, 1980), the WCARRD (Hill et al., 2007, p. 115; Hill et al., 2007, p.129), Stockbridge and Dorward (2013) and Singh (1999). Please see table below.

Table 16. Main and sub-determinants of rural development

Main determinants	Sub-determinant
Enabling environment	Policies and institutions
	Infrastructure (including ICT)
	Access to inputs, markets and services
	Access to capital
Reducing rural poverty by addressing basic needs	Nutrition
	Clothing
	Shelter
	Drinking water
	Sanitation
	Education
	Healthcare
	Public transportation
	Income
	Consumption
	Gender
Broad economic growth	Agricultural economic growth
	Non-agricultural economic growth
	Employment amongst adults
Availability of natural resources	Resilience to climate change
	(Sustainable) access to land, water and other natural resources

Enabling environment concerns, firstly, policies and institutions which could provide sound overall macroeconomic policy and a supportive institutional framework (Hill et al., 2007, p. 469). If it does, provision of production inputs and services can be increased, transactions costs are reduced, bargaining power of rural producers are enhanced, etcetera (Singh, 1999). Infrastructure includes access to roads, electricity and (technological) communication (Hill et al., 2007, p. 470). Access to inputs, markets and services indicates to what extent a region benefits from the changes available (Hill et al., 2007, p. 115). Capital, in this sense, can be classified in two different ways: 1) long-term capital, which is embodied in long-lived forms of capital like improvements in land, machinery, equipment and basic infrastructure, and 2) operating capital, which exists in forms of raw materials annually used up in the production process, like fuel, seeds, and fertilizers (Singh, 1999, p. 101).

Reducing extreme poverty and addressing basic needs go hand in hand (Stockbridge & Dorward, 2013). In 1980, the World Bank explained the efforts for reducing absolute poverty has to do with meeting basic needs (the World Bank, 1980). More recently, Chiappero-Martinetti (2014) stated: “Basic needs (…) are generally defined in terms of a minimal list of elements that human beings

necessitate, in order to fulfill basic requirements and achieve a decent life. Typically, the list includes basic commodities, such as food, clothing, and shelter, as well as essential services, as access to drinking water, to sanitation, to education, to healthcare facilities, and to public transportation. Broader definitions of basic needs further extend the attention to other psychological and social needs – such as participation, self-reliance, autonomy, and self-expression." Many countries use the distribution of income and consumption as a key measure on whether poor can meet their basic needs (Hill et al., 2007, p. 129). Although gender issues are not only present in rural areas, often gender-related poverty is harder to tackle in rural areas compared to urban areas (Stockbridge & Dorward, 2013, p. 20).

Improvement of incomes, though, will not be able without (broad) economic growth (Hill et al., 2007, p. 469). Agricultural economic growth is important since agriculture is a major activity of the people living in rural areas (Hill et al., 2007, p. 14). Furthermore, non-farm activities usually grow faster than farm production and are highly important in expanding rural employment and income (Hill et al., 2007, p. 27). Only employment amongst adults will be taken into account since higher employment rates as a consequence of child labor indicate these children lack access to education which leads to less productive labor over the long run (Singh, 1999).

Regarding the availability of natural resources, it has to be said that availability of natural resources – as input for the production process – affects both the productivity as well as the livelihoods of people depending upon them (Stockbridge & Dorward, 2013). Especially since agriculture is a heavy consumer of natural resources, sustainable management of natural resources provide the foundation for pro-poor rural development (Hill et al., 2007, p. 471).

Appendix B. Selected cases

Please find the selected emerging and developing in countries in the table below. Regarding data analysis part 1 and part 3 a total of 13 countries are selected. Regarding data analysis part 2, a total of 92 countries are selected. Selection is based on three case selection criteria:

Case selection criterion 1: A country must be classified as emerging or developing economy by the IMF.

Case selection criterion 2: On 'Political Stability And Absence Of Violence/Terrorism: Estimate', a country must score at least a -1 as an estimate of the score of 2011, 2014 and 2017.

Case selection criterion 3: In 2011, 2014 and in 2017, at least 60% of the total population of a country must be classified as rural.
Criterion 3 is only applied for data analysis part 1 and part 3 where national data is used.

Table 17. Selected emerging and developing economies

Selected countries: data analysis part 1 and part 3 (N = 13)			
Tajikistan	Uganda	Zimbabwe	Sri Lanka
Madagascar	Tanzania	Nepal	
Burkina Faso	Cambodia	Rwanda	
Kyrgyz Republic	Malawi	Vietnam	

Selected countries: data analysis part 2			
Afghanistan	Costa Rica	Lao PDR	Romania
Angola	Croatia	Lesotho	Russian Federation
Argentina	Cyprus	Liberia	Rwanda
Armenia	Czech Republic	Madagascar	Saudi Arabia
Azerbaijan	Djibouti	Malawi	Senegal
Bahrain	Dominican Republic	Malaysia	Serbia
Belarus	Ecuador	Mauritania	Sierra Leone
Belize	El Salvador	Mauritius	South Africa
Benin	Ewatini	Mexico	Sri Lanka
Bhutan	Gabon	Moldova	Tajikistan
Bolivia	Georgia	Mongolia	Tanzania
Bosnia and Herzegovina	Ghana	Montenegro	Thailand
Botswana	Guatemala	Morocco	Togo
Brazil	Haiti	Mozambique	Trinidad and Tobago
Bulgaria	Honduras	Namibia	Tunisia
Burkina Faso	Hungary	Nepal	Turkmenistan
Cambodia	Indonesia	Nicaragua	Uganda
Cameroon	Jamaica	Oman	United Arab Emirates
Chile	Jordan	Panama	Uruguay
China	Kazakhstan	Paraguay	Uzbekistan
Comoros	Kosovo	Peru	Vietnam
Congo, Dem. Rep.	Kuwait	Poland	Zambia
Congo, Rep.	Kyrgyz Republic	Qatar	Zimbabwe

Appendix C. Full list of indicators per variable

Please note the following:

- In the tables, WB refers to 'World Bank Open Data'
- 'Change over three years' refer to the difference in the values of 2011 and 2014, or the difference in the values of 2014 and 2017

Table 18. Financial inclusion: full list of variables and indicators

Variable	Indicator	Abbreviation	Data source
Accessibility of financial services	Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+)	Account	WB: World Development Indicators
	Account, rural (% age 15+)	Account, rural	WB: Global Financial Inclusion
	Account, female (% age 15+)	Account, female	WB: Global Financial Inclusion
	Account, male (% age 15+)	Account, male	WB: Global Financial Inclusion
	Account ownership, gender gap	Account, gender gap	Calculated via: Account, male – account, female
	Account ownership, change over three years (% age 15+)	Account – Difference	Calculated: newest year minus oldest year
	Account ownership, rural, change over three years (% age 15+)	Account, rural – Difference	Calculated: newest year minus oldest year
	Account ownership, female, change over three years (% age 15+)	Account, female – Difference	Calculated: newest year minus oldest year
	Account ownership, male, change over three years (% age 15+)	Account, male – Difference	Calculated: newest year minus oldest year
	Account ownership: gender gap, change over three years (% age 15+)	Account gender gap – Difference	Calculated: newest year minus oldest year

Table 19. Outputs of financial inclusion: full list of variables and indicators

Variable	Indicator	Abbreviation	Data source
More government subsidies being paid out directly to FSP accounts	Received government payments: into an account (% payment recipients, age 15+)	Government payments	WB: Global Financial Inclusion
	Government payments, change over three years	Government payments – Difference	Calculated: newest year minus oldest year
Greater bank stability	Bank capital to total assets (%)	Bank capital	WB: Global financial development
	Bank capital to total assets (%), change over three years	Bank capital – Difference	Calculated: newest year minus oldest year
Easier to obtain credit	Borrowed from a financial institution or used a credit card (% age 15+)	Borrowed institution	WB: Global Financial Inclusion
	Borrowed from a financial institution or used a credit card, rural (% age 15+)	Borrowed institution, rural	WB: Global Financial Inclusion
	Borrowed from a financial institution or used a credit card, female (% age 15+)	Borrowed institution, female	WB: Global Financial Inclusion
	Borrowed from a financial institution or used a credit card, male (% age 15+)	Borrowed institution, male	WB: Global Financial Inclusion
	Borrowed institution, gender gap	Borrowed institution, gender gap	Calculated: Borrowed institution, male minus Borrowed institution, female
	Borrowed institution, change over three years (% age 15+)	Borrowed institution – Difference	Calculated: newest year minus oldest year
	Borrowed institution, rural, change over three years (% age 15+)	Borrowed institution, rural – Difference	Calculated: newest year minus oldest year
	Borrowed institution, female, change over three years (% age 15+)	Borrowed institution, female – Difference	Calculated: newest year minus oldest year
	Borrowed institution, male, change over three years (% age 15+)	Borrowed institution, male – Difference	Calculated: newest year minus oldest year
	Borrowed institution, gender gap, change over three years	Borrowed institution, gender gap – Difference	Calculated: newest year minus oldest year
	Domestic credit to private sector (% of gdp)	Domestic credit	WB: World Development Indicators
	Domestic credit, change over three years	Domestic credit – Difference	Calculated: newest year minus oldest year
	Borrowed from family or friends (% age 15+)	Borrowed informal	WB: Global Financial Inclusion

Less usage of informal sources of credit	Borrowed from family or friends, rural (% age 15+)	Borrowed informal, rural	WB: Global Financial Inclusion
	Borrowed from family or friends, female (% age 15+)	Borrowed informal, female	WB: Global Financial Inclusion
	Borrowed from family or friends, male (% age 15+)	Borrowed informal, male	WB: Global Financial Inclusion
	Borrowed informal, gender gap	Borrowed informal, gender gap	Calculated: Borrowed informal, male minus Borrowed informal, female
	Borrowed informal, change over three years (% age 15+)	Borrowed informal – Difference	Calculated: newest year minus oldest year
	Borrowed informal, rural, change over three years (% age 15+)	Borrowed informal, rural – Difference	Calculated: newest year minus oldest year
	Borrowed informal, female, change over three years (% age 15+)	Borrowed informal, female – Difference	Calculated: newest year minus oldest year
	Borrowed informal, male, change over three years (% age 15+)	Borrowed informal, male – Difference	Calculated: newest year minus oldest year
	Borrowed informal, gender gap	Borrowed informal, gender gap – Difference	Calculated: newest year minus oldest year
More savings accumulated in an account	Saved at a financial institution (% age 15+)	Saved	WB: Global Financial Inclusion
	Saved at a financial institution, rural (% age 15+)	Saved, rural	WB: Global Financial Inclusion
	Saved at a financial institution, female (% age 15+)	Saved, female	WB: Global Financial Inclusion
	Saved at a financial institution, male (% age 15+)	Saved, male	WB: Global Financial Inclusion
	Saved, gender gap	Saved, gender gap	Calculated: Saved, male – Saved, female
	Saved at a financial institution, change over three years (% age 15+)	Saved – Difference	Calculated: newest year minus oldest year
	Saved at a financial institution, rural, change over three years (% age 15+)	Saved, rural – Difference	Calculated: newest year minus oldest year
	Saved at a financial institution, female, change over three years (% age 15+)	Saved, female – Difference	Calculated: newest year minus oldest year
	Saved at a financial institution, male, change over three years (% age 15+)	Saved, male – Difference	Calculated: newest year minus oldest year
	Saved, gender gap, change over three years	Saved, gender gap – Difference	Calculated: newest year minus oldest year
	Adjusted savings: net national savings (current us$)	National savings	WB: World Development Indicators
	National savings, change over three years (current us$)	National savings – Difference	Calculated: newest year minus oldest year

Table 20. Outcomes of financial inclusion: full list of variables and indicators

Variable	Indicator	Abbreviation	Data source
Economic growth	GDP per capita (constant 2010 US$)	GDPpc	WB: World Development Indicators
	GDP per capita, change over three years (constant 2010 US$)	GDPpc - Difference	Calculated: newest year minus oldest year
	GDP per capita, PPP (constant 2017 international $)	GDPpcPPP	WB: World Development Indicators
	GDP per capita, PPP, change over three years (constant 2017 international $)	GDPpcPPP - Difference	Calculated: newest year minus oldest year
Increased employment	Employment to population ratio, 15+, total (%) (modeled ILO estimate)	Employment	WB: World Development Indicators
	Employment, female (% age 15+)	Employment, female	WB: World Development Indicators
	Employment, male (% age 15+)	Employment, male	WB: World Development Indicators
	Employment, gender gap (% age 15+)	Employment, gender gap	Calculated: male minus female
	Employment, change over three years (% age 15+)	Employment – Difference	Calculated: newest year minus oldest year
	Employment, female, change over three years (% age 15+)	Employment, female – Difference	Calculated: newest year minus oldest year
	Employment, male, change over three years (% age 15+)	Employment, male – Difference	Calculated: newest year minus oldest year
	Employment, gender gap, change over three years (% age 15+)	Employment, gender gap – Difference	Calculated: male minus female

Table 21. Rural development: full list of variables and indicators

Variable	Indicator	Abbreviation	Data source
Emergency funds	Coming up with emergency funds: not possible (% age 15+)	No emergency funds	World Bank Open Data: Global Financial Inclusion
	Coming up with emergency funds: not possible, rural (% age 15+)	No emergency funds, rural	World Bank Open Data: Global Financial Inclusion
	Coming up with emergency funds: not possible, female (% age 15+)	No emergency funds, female	World Bank Open Data: Global Financial Inclusion
	Coming up with emergency funds: not possible, male (% age 15+)	No emergency funds, male	World Bank Open Data: Global Financial Inclusion
	No emergency funds, difference (% age 15+)	No emergency funds – Difference	Calculated: newest year minus oldest year
	No emergency funds, rural, change over three years (% age 15+)	No emergency funds, rural – Difference	Calculated: newest year minus oldest year
	No emergency funds, female, change over three years (% age 15+)	No emergency funds, female – Difference	Calculated: newest year minus oldest year
	No emergency funds, male, change over three years (% age 15+)	No emergency funds, male – Difference	Calculated: newest year minus oldest year
Nutrition	Prevalence of undernourishment (% of population)	Undernourishment	WB: World Development Indicators
	Prevalence of undernourishment, change over three years (% of population)	Undernourishment – Difference	Calculated: newest year minus oldest year
Drinking water	People using at least basic drinking water services (% of population)	Drinking water	WB: World Development Indicators
	People using at least basic drinking water services, rural (% of population)	Drinking water, rural	WB: World Development Indicators
	People using at least basic drinking water services, change over three years (% of population)	Drinking water – Difference	Calculated: newest year minus oldest year
	People using at least basic drinking water services, rural, change over three years (% of population)	Drinking water, rural – Difference	Calculated: newest year minus oldest year
Sanitation	People using at least basic sanitation services (% of population)	Sanitation	WB: World Development Indicators
	People using at least basic sanitation services, rural (% of population)	Sanitation, rural	WB: World Development Indicators

	People using at least basic sanitation services, change over three years (% of population)	Sanitation – Difference	Calculated: newest year minus oldest year
	People using at least basic sanitation services, rural, change over three years (% of population)	Sanitation, rural – Difference	Calculated: newest year minus oldest year
Education	School enrollment, primary (% gross)	Education	WB: World Development Indicators
	School enrollment, primary, female (% gross)	Education, female	WB: World Development Indicators
	School enrollment, primary, male (% gross)	Education, male	WB: World Development Indicators
	School enrollment, primary, change over three years (% gross)	Education – Difference	Calculated: newest year minus oldest year
	School enrollment, primary, female, change over three years (% gross)	Education, female – Difference	Calculated: newest year minus oldest year
	School enrollment, primary, male, change over three years (% gross)	Education, male – Difference	Calculated: newest year minus oldest year
Basic health care	Maternal mortality ratio (modeled estimate, per 100,000 live births)	Maternal mortality	WB: World Development Indicators
	Maternal mortality ratio, change over three years (modeled estimate, per 100,000 live births)	Maternal mortality – Difference	Calculated: newest year minus oldest year
	Immunization, DPT (% of children ages 12-23 months)	Immunization	WB: World Development Indicators
	Immunization, DPT, change over three years (% of children ages 12-23 months)	Immunization – Difference	Calculated: newest year minus oldest year

Appendix D. Extended version of results simple linear regressions

This appendix present the values of all performed the simple linear regressions. The tables also explain whether there is a positive or negative correlation between the indicators. Please note some indicators describe the opposite of the variables they represent (Table 22). Therefore, when the linear regression included one of these indicators, positive correlations between the indicators mean there is a negative correlation between the variables. Moreover, negative correlations between the indicators mean there is a positive correlation between the variables. The table below lists the indicators which are the opposite of the variable they represent. In this appendix, the 'Type of correlation' refers to the correlation between the indicators mentioned.

Table 22. Indicators representing the opposite then their variable

Variable	Corresponding indicator, describing the opposite
Less usage of informal sources of credit	Borrowed from family or friends (% age 15+)
Emergency funds available	Coming up with emergency funds: not possible (% age 15+)
Nutrition available	Prevalence of undernourishment (% of population)
Basic health care available	Maternal mortality ratio (modeled estimate, per 100,000 live births)

Data analysis part 1. Cases: CountryYear

Table 23. Part 1: Results of simple linear regressions, CountryYear cases

Indicator 1	Indicator 2	N	Sig.	R^2	Type of correlation
Regressions between indicators of financial inclusion and indicators of outputs					
Account	Government payments	17	0,001	0,515	Positive
Account	Bank capital	25	0,009	0,264	Negative
Account	Borrowed institution	26	0,310	0,043	Positive
Account	Domestic credit	34	0,642	0,007	Positive
Account	Borrowed informal	39	0,176	0,049	Negative
Account	Saved	39	0,000	0,590	Positive
Account	National savings	39	0,109	0,068	Positive
Regressions between indicators of financial inclusion and indicators of outputs					
Account	GDPpc	39	0,000	0,451	Positive
Account	GDPpcPPP	39	0,000	0,321	Positive
Account	Employment	39	0,327	0,026	Negative
Regressions between indicators of outputs and indicators of outcomes					
Government payments	GDPpc	17	0,229	0,095	Positive
Bank Capital	GDPpc	25	0,012	0,243	Negative
Borrowed institution	GDPpc	26	0,026	0,190	Positive
Domestic credit	GDPpc	34	0,046	0,119	Positive
Borrowed informal	GDPpc	39	0,001	0,254	Negative
Saved	GDPpc	39	0,000	0,402	Positive

National savings	GDPpc	39	0,000	0,309	Positive
Government payments	GDPpcPPP	17	0,455	0,038	Positive
Bank Capital	GDPpcPPP	25	0,024	0,203	Negative
Borrowed institution	GDPpcPPP	26	0,007	0,263	Positive
Domestic credit	GDPpcPPP	24	0,008	0,212	Positive
Borrowed informal	GDPpcPPP	39	0,000	0,334	Negative
Saved	GDPpcPPP	39	0,000	0,294	Positive
National savings	GDPpcPPP	39	0,000	0,404	Positive
Government payments	Employment	13	0,004	0,537	Negative
Bank Capital	Employment	17	0,895	0,001	Positive
Borrowed institution	Employment	17	0,490	0,032	Positive
Domestic credit	Employment	20	0,300	0,060	Positive
Borrowed informal	Employment	24	0,208	0,071	Positive
Saved	Employment	24	0,144	0,094	Negative
National savings	Employment	24	0,660	0,009	Positive
Regressions between indicators of outcomes and indicators of rural development					
GDPpc	No emergency funds	26	0,834	0,002	Positive
GDPpc	Undernourishment	36	0,044	0,114	Negative
GDPpc	Drinking water	39	0,001	0,256	Positive
GDPpc	Sanitation	39	0,000	0,302	Positive
GDPpc	Education	34	0,039	0,127	Negative
GDPpc	Maternal mortality	39	0,002	0,232	Negative
GDPpc	Immunization	39	0,000	0,188	Positive
GDPpcPPP	No emergency funds	26	0,492	0,020	Negative
GDPpcPPP	Undernourishment	36	0,002	0,259	Negative
GDPpcPPP	Drinking water	39	0,000	0,428	Positive
GDPpcPPP	Sanitation	39	0,000	0,433	Positive
GDPpcPPP	Education	34	0,000	0,118	Negative
GDPpcPPP	Maternal mortality	39	0,000	0,385	Negative
GDPpcPPP	Immunization	39	0,006	0,185	Positive
Employment	No emergency funds	26	0,480	0,021	Positive
Employment	Undernourishment	24	0,341	0,041	Positive
Employment	Drinking water	24	0,680	0,008	Negative
Employment	Sanitation	24	0,378	0,035	Negative
Employment	Education	22	0,448	0,029	Negative
Employment	Maternal mortality	24	0,227	0,066	Positive
Employment	Immunization	24	0,877	0,001	Negative
Additional regressions					
Borrowed institution	Borrowed informal	26	0,436	0,025	Negative

Data analysis part 1. Cases: CountryDifference

Table 24. Part 1: Results of simple linear regressions, CountryDifference cases

Indicator 1	Indicator 2	N	Sig.	R^2	Type of correlation
Regressions between indicators of financial inclusion and indicators of outputs					
Account – Difference	Government payments – Difference	6	0,005	0,887	Positive
Account – Difference	Bank capital – Difference	14	0,002	0,581	Negative
Account – Difference	Borrowed institution – Difference	13	0,002	0,590	Positive
Account – Difference	Domestic credit – Difference	22	0,401	0,036	Positive
Account – Difference	Borrowed informal – Difference	26	0,787	0,003	Negative
Account – Difference	Saved – Difference	26	0,069	0,131	Positive
Account – Difference	National savings – Difference	26	0,759	0,004	Positive
Regressions between indicators of financial inclusion and indicators of outcomes					
Account - Difference	GDPpc - Difference	26	0,521	0,017	Positive
Account - Difference	GDPpcPPP - Difference	26	0,618	0,011	Negative
Account - Difference	Employment - Difference	26	0,005	0,285	Negative
Regressions between indicators of outputs and indicators of outcomes					
Government payments - Difference	GDPpc - Difference	6	0,387	0,190	Positive
Bank Capital - Difference	GDPpc - Difference	14	0,593	0,025	Positive
Borrowed institution - Difference	GDPpc - Difference	13	0,290	0,101	Positive
Domestic credit - Difference	GDPpc - Difference	22	0,455	0,028	Positive
Borrowed informal - Difference	GDPpc - Difference	26	0,602	0,012	Negative
Saved - Difference	GDPpc - Difference	26	0,005	0,290	Positive
National savings - Difference	GDPpc - Difference	26	0,999	0,000	-
Government payments - Difference	GDPpcPPP - Difference	6	0,096	0,540	Negative
Bank Capital - Difference	GDPpcPPP - Difference	14	0,781	0,007	Negative
Borrowed institution - Difference	GDPpcPPP - Difference	13	0,708	0,013	Negative
Domestic credit - Difference	GDPpcPPP - Difference	22	0,161	0,096	Positive
Borrowed informal - Difference	GDPpcPPP - Difference	26	0,462	0,023	Positive
Saved - Difference	GDPpcPPP - Difference	26	0,614	0,011	Positive
National savings - Difference	GDPpcPPP - Difference	26	0,652	0,009	Positive
Government payments - Difference	Employment - Difference	6	0,229	0,021	Negative
Bank Capital - Difference	Employment - Difference	14	0,051	0,160	Positive
Borrowed institution - Difference	Employment - Difference	13	0,170	0,005	Negative
Domestic credit - Difference	Employment - Difference	22	0,200	0,135	Negative
Borrowed informal - Difference	Employment - Difference	26	0,833	0,046	Positive
Saved - Difference	Employment - Difference	26	0,258	0,005	Negative
National savings - Difference	Employment - Difference	26	0,787	0,015	Positive
Regressions between indicators of outcomes and indicators of rural development					
GDPpc - Difference	No emergency funds - Difference	13	0,184	0,040	Negative
GDPpc - Difference	Undernourishment - Difference	24	0,347	0,040	Negative
GDPpc - Difference	Drinking water - Difference	26	0,332	0,039	Positive
GDPpc - Difference	Sanitation - Difference	26	0,083	0,120	Positive

GDPpc - Difference	Education - Difference	21	0,961	0,000	-
GDPpc - Difference	Maternal mortality	26	0,735	0,005	Positive
GDPpc - Difference	Immunization - Difference	26	0,558	0,014	Negative
GDPpcPPP - Difference	No emergency funds - Difference	13	0,510	0,040	Negative
GDPpcPPP - Difference	Undernourishment - Difference	24	0,017	0,233	Negative
GDPpcPPP - Difference	Drinking water - Difference	26	0,872	0,001	Negative
GDPpcPPP - Difference	Sanitation - Difference	26	0,211	0,064	Positive
GDPpcPPP - Difference	Education - Difference	21	0,856	0,002	Negative
GDPpcPPP - Difference	Maternal mortality - Difference	26	0,003	0,317	Positive
GDPpcPPP - Difference	Immunization - Difference	26	0,871	0,001	Negative
Employment - Difference	No emergency funds - Difference	13	0,691	0,015	Negative
Employment - Difference	Undernourishment - Difference	12	0,414	0,068	Negative
Employment - Difference	Drinking water - Difference	12	0,719	0,014	Positive
Employment - Difference	Sanitation - Difference	12	0,268	0,121	Negative
Employment - Difference	Education - Difference	11	0,778	0,009	Negative
Employment - Difference	Maternal mortality - Difference	12	0,278	0,116	Positive
Employment - Difference	Immunization - Difference	12	0,454	0,057	Positive
Additional regressions					
Borrowed institution – Difference	Borrowed informal – Difference	13	0,311	0,093	Positive

Data analysis part 2. Cases: CountryYear

Table 25. Part 2: Results of simple linear regressions, CountryYear cases

Indicator 1	Indicator 2	N	Sig.	R^2	Type of correlation
Regressions between indicators of financial inclusion and indicators of outputs					
Account, rural	Borrowed institution, rural	154	0,000	0,448	Positive
Account, rural	Borrowed informal, rural	234	0,004	0,035	Negative
Account, rural	Saved, rural	234	0,000	0,541	Positive
Regressions between indicators of outputs and indicators of rural development					
Borrowed institution, rural	No emergency funds, rural	154	0,000	0,081	Negative
Borrowed institution, rural	Drinking water, rural	150	0,000	0,333	Positive
Borrowed institution, rural	Sanitation, rural	150	0,000	0,286	Positive
Borrowed informal, rural	No emergency funds, rural	154	0,138	0,014	Positive
Borrowed informal, rural	Drinking water, rural	229	0,000	0,213	Negative
Borrowed informal, rural	Sanitation, rural	229	0,000	0,194	Negative
Saved, rural	No emergency funds, rural	154	0,607	0,002	Negative
Saved, rural	Drinking water, rural	228	0,000	0,089	Positive
Saved, rural	Sanitation, rural	228	0,000	0,080	Positive
Additional regressions					
Borrowed institution, rural	Borrowed informal, rural	162	0,019	0,034	Negative

Data analysis part 2. Cases: CountryDifference

Table 26. Part 2: Results of simple linear regressions, CountryDifference cases

Indicator 1	Indicator 2	N	Sig.	R^2	Type of correlation
Regressions between indicators of financial inclusion and indicators of outputs					
Account, rural – Difference	Borrowed institution, rural – Difference	75	0,000	0,336	Positive
Account, rural – Difference	Borrowed informal, rural – Difference	148	0,003	0,060	Positive
Account, rural – Difference	Saved, rural - Difference	148	0,000	0,184	Positive
Regressions between indicators of outputs and indicators of rural development					
Borrowed institution, rural - Difference	No emergency funds, rural - Difference	75	0,009	0,089	Negative
Borrowed institution, rural - Difference	Drinking water, rural - Difference	68	0,677	0,003	Negative
Borrowed institution, rural - Difference	Sanitation, rural - Difference	69	0,956	0,000	-
Borrowed informal, rural - Difference	No emergency funds, rural - Difference	75	0,089	0,040	Negative
Borrowed informal, rural - Difference	Drinking water, rural - Difference	137	0,891	0,000	-
Borrowed informal, rural - Difference	Sanitation, rural - Difference	139	0,177	0,013	Positive
Saved, rural - Difference	No emergency funds, rural - Difference	75	0,001	0,149	Negative
Saved, rural - Difference	Drinking water, rural - Difference	137	0,344	0,007	Negative
Saved, rural - Difference	Sanitation, rural - Difference	139	0,766	0,000	-
Additional regressions					
Account, rural – Difference Excluded: Kuwait 2014 – 2017	Borrowed institution, rural – Difference Excluded: Kuwait 2014 – 2017	74	0,000	0,332	Positive
Borrowed institution, rural – Difference	Borrowed informal, rural – Difference	75	0,766	0,001	Positive

Data analysis part 3. Cases: CountryYear. Data on female population

Table 27. Part 3: Results of simple linear regressions, female population, CountryYear cases

Indicator 1	Indicator 2	N	Sig.	R^2	Type of correlation
Regressions between indicators of financial inclusion and indicators of outputs					
Account, female	Borrowed institution, female	39	0,071	0,085	Negative
Account, female	Borrowed informal, female	39	0,071	0,085	Negative
Account, female	Saved, female	39	0,000	0,600	Positive
Account, female	People credit, gender gap	26	0,274	0,050	Negative
Account, female	Borrowed informal, gender gap	39	0,232	0,038	Positive
Account, female	Saved, gender gap	39	0,140	0,058	Negative
Account gender gap	Borrowed institution, female	39	0,033	0,117	Positive
Account gender gap	Borrowed informal, female	39	0,033	0,117	Positive
Account gender gap	Saved, female	39	0,441	0,016	Positive
Regressions between indicators of financial inclusion and indicators of outcomes					
Account, female	Employment, female	39	0,120	0,064	Negative
Account, female	Employment, gender gap	39	0,168	0,051	Positive
Account, gender gap	Employment, female	39	0,008	0,177	Positive
Account, gender gap	Employment, gender gap	39	0,015	0,151	Negative
Regressions between indicators of outputs and indicators of outcomes					
Borrowed institution, female	Employment, female	26	0,607	0,011	Negative
Borrowed informal, female	Employment, female	29	0,000	0,447	Positive
Saved, female	Employment, female	39	0,324	0,026	Negative
Borrowed institution, female	Employment, gender gap	26	0,241	0,057	Positive
Borrowed informal, female	Employment, gender gap	39	0,000	0,430	Negative
Saved, female	Employment, gender gap	39	0,052	0,098	Positive
Regressions between indicators of outcomes and indicators of rural development					
Employment, female	No emergency funds	26	0,432	0,026	Positive
Employment, female	Education, female	39	0,020	0,137	Negative
Employment, female	Maternal mortality	39	0,000	0,367	Positive
Employment, gender gap	No emergency funds	26	0,591	0,012	Negative
Employment, gender gap	Education, female	39	0,010	0,166	Positive
Employment, gender gap	Maternal mortality	39	0,001	0,264	Negative
Regressions between indicators of outputs and indicators of rural development					
Borrowed institution, female	No emergency funds, female	26	0,447	0,024	Positive
Borrowed institution, female	Education, female	26	0,005	0,290	Positive
Borrowed institution, female	Maternal mortality	26	0,004	0,292	Negative
Borrowed informal, female	No emergency funds, female	26	0,000	0,024	Positive
Borrowed informal, female	Education, female	39	0,000	0,425	Negative
Borrowed informal, female	Maternal mortality	29	0,000	0,451	Positive
Saved, female	No emergency funds, female	26	0,961	0,000	-
Saved, female	Education, female	39	0,074	0,084	Positive
Saved, female	Maternal mortality	39	0,288	0,030	Negative
Additional regressions					
Borrowed informal, female	Borrowed institution, female	26	0,508	0,018	Negative

Data analysis part 3. Cases: CountryDifference. Data on female population

Table 28. Part 3: Results of simple linear regressions, female population, CountryDifference cases

Indicator 1	Indicator 2	N	Sig.	R^2	Type of correlation
Regressions between indicators of financial inclusion and indicators of outputs					
Account, female – Difference	Borrowed institution, female – Difference	14	0,398	0,297	Positive
Account, female – Difference	Borrowed informal, female – Difference	38	0,112	0,069	Negative
Account, female – Difference	Saved, female - Difference	38	0,005	0,198	Positive
Account gender gap – Difference	Borrowed institution, female – Difference	14	0,080	0,234	Positive
Account gender gap – Difference	Borrowed informal, female – Difference	38	0,818	0,001	Positive
Account gender gap – Difference	Saved, female - Difference	38	0,818	0,142	Positive
Account, female – Difference	Borrowed institution, gender gap – Difference	13	0,776	0,008	Positive
Account, female – Difference	Borrowed informal, gender gap – Difference	38	0,137	0,060	Negative
Account, female – Difference	Saved, gender gap – Difference	38	0,622	0,007	Negative
Regressions between indicators of financial inclusion and indicators of outcomes					
Account, female – Difference	Employment, female – Difference	26	0,586	0,013	Negative
Account, female – Difference	Employment, gender gap – Difference	26	0,375	0,033	Negative
Account, gender gap – Difference	Employment, female – Difference	26	0,631	0,010	Positive
Account, gender gap – Difference	Employment, gender gap – Difference	26	0,289	0,047	Positive
Regressions between indicators of outputs and indicators of outcomes					
Borrowed institution, female - Difference	Employment, female - Difference	14	0,138	0,174	Positive
Borrowed informal, female – Difference	Employment, female – Difference	26	0,510	0,018	Positive
Saved, female – Difference	Employment, female – Difference	26	0,718	0,006	Positive
Borrowed institution, female – Difference	Employment, gender gap – Difference	14	0,041	0,305	Negative
Borrowed informal, female – Difference	Employment, gender gap – Difference	26	0,577	0,013	Negative
Saved, female – Difference	Employment, gender gap – Difference	26	0,311	0,043	Negative
Regressions between indicators of outcomes and indicators of rural development					
Employment, female – Difference	No emergency funds – Difference	13	0,776	0,008	Negative
Employment, female - Difference	Education, female – Difference	26	0,840	0,002	Positive
Employment, female – Difference	Maternal mortality	26	0,585	0,443	Positive
Employment, gender gap – Difference	No emergency funds – Difference	13	0,972	0,000	-

Employment, gender gap - Difference	Education, female – Difference	26	0,787	0,003	Positive
Employment, gender gap – Difference	Maternal mortality – Difference	26	0,506	0,019	Negative
Regressions between indicators of outputs and indicators of rural development					
Borrowed institution, female - Difference	No emergency funds, female – Difference	13	0,903	0,001	Negative
Borrowed institution, female – Difference	Education, female – Difference	14	0,688	0,014	Negative
Borrowed institution, female – Difference	Maternal mortality – Difference	14	0,950	0,000	-
Borrowed informal, female – Difference	No emergency funds, female – Difference	13	0,148	0,181	Negative
Borrowed informal, female – Difference	Education, female – Difference	26	0,805	0,003	Negative
Borrowed informal, female – Difference	Maternal mortality	26	0,938	0,000	-
Saved, female – Difference	No emergency funds, female – Difference	13	0,240	0,123	Negative
Saved, female – Difference	Education, female – Difference	26	0,000	0,440	Negative
Saved, female – Difference	Maternal mortality – Difference	26	0,104	0,106	Positive
Additional regressions					
Borrowed institution, female – Difference	Borrowed informal, female – Difference	14	0,451	0,135	Positive

Data analysis part 3. Cases: CountryYear. Data on male population

Table 29. Part 3: Results of simple linear regressions, male population, CountryYear cases

Indicator 1	Indicator 2	N	Sig.	R^2	Type of correlation
Regressions between indicators of financial inclusion and indicators of outputs					
Account, male	Borrowed institution, male	26	0,236	0,058	Positive
Account, male	Borrowed informal, male	39	0,423	0,017	Negative
Account, male	Saved, male	39	0,000	0,566	Positive
Regressions between indicators of financial inclusion and indicators of outcomes					
Account, male	Employment, male	39	0,910	0,000	-
Regressions between indicators of outputs and indicators of outcomes					
Borrowed institution, male	Employment, male	26	0,756	0,004	Negative
Borrowed informal, male	Employment, male	39	0,002	0,229	Positive
Saved, male	Employment, male	39	0,781	0,002	Positive
Regressions between indicators of outcomes and rural development					
Employment, male	No emergency funds	26	0,497	0,019	Positive
Employment, male	Education, male	26	0,175	0,075	Positive
Regressions between indicators of outputs and indicators of rural development					
Borrowed institution, male	Education, male	26	0,003	0,316	Positive
Borrowed informal, male	Education, male	39	0,000	0,387	Negative

Saved, male	Education, male	39	0,184	0,047	Positive
Additional regressions					
Borrowed informal, male	Borrowed institution, male	26	0,378	0,032	Negative

Data analysis part 3. Cases: CountryDifference. Data on male population

Table 30. Part 3: Results of simple linear regressions, male population, CountryDifference cases

Indicator 1	Indicator 2	N	Sig.	R^2	Type of correlation
Regressions between indicators of financial inclusion and indicators of outputs					
Account, male - Difference	Borrowed institution, male - Difference	13	0,112	0,214	Positive
Account, male – Difference	Borrowed informal, male - Difference	38	0,401	0,020	Negative
Account, male - Difference	Saved, male - Difference	38	0,004	0,209	Positive
Regressions between indicators of financial inclusion and indicators of outcomes					
Account, male – Difference	Employment, male – Difference	26	0,933	0,000	-
Regressions between indicators of outputs and indicators of outcomes					
Borrowed institution, male - Difference	Employment, male - Difference	13	0,058	0,290	Negative
Borrowed informal, male - Difference	Employment, male - Difference	26	0,211	0,064	Positive
Saved, male - Difference	Employment, male - Difference	26	0,288	0,047	Negative
Regressions between indicators of outcomes and indicators of rural development					
Employment, male - Difference	No emergency funds, male - Difference	13	0,842	0,004	Positive
Employment, male - Difference	Education, male - Difference	26	0,513	0,018	Positive
Regressions between indicators of outputs and indicators of rural development					
Education, male - Difference	Borrowed institution, male - Difference	13	0,712	0,013	Negative
Education, male - Difference	Borrowed informal, male - Difference	26	0,762	0,004	Negative
Education, male - Difference	Saved, male - Difference	26	0,041	0,163	Negative
Additional regressions					
Borrowed informal, male – Difference	Borrowed institution, male – Difference	13	0,805	0,006	Positive

Appendix E. Scatterplots

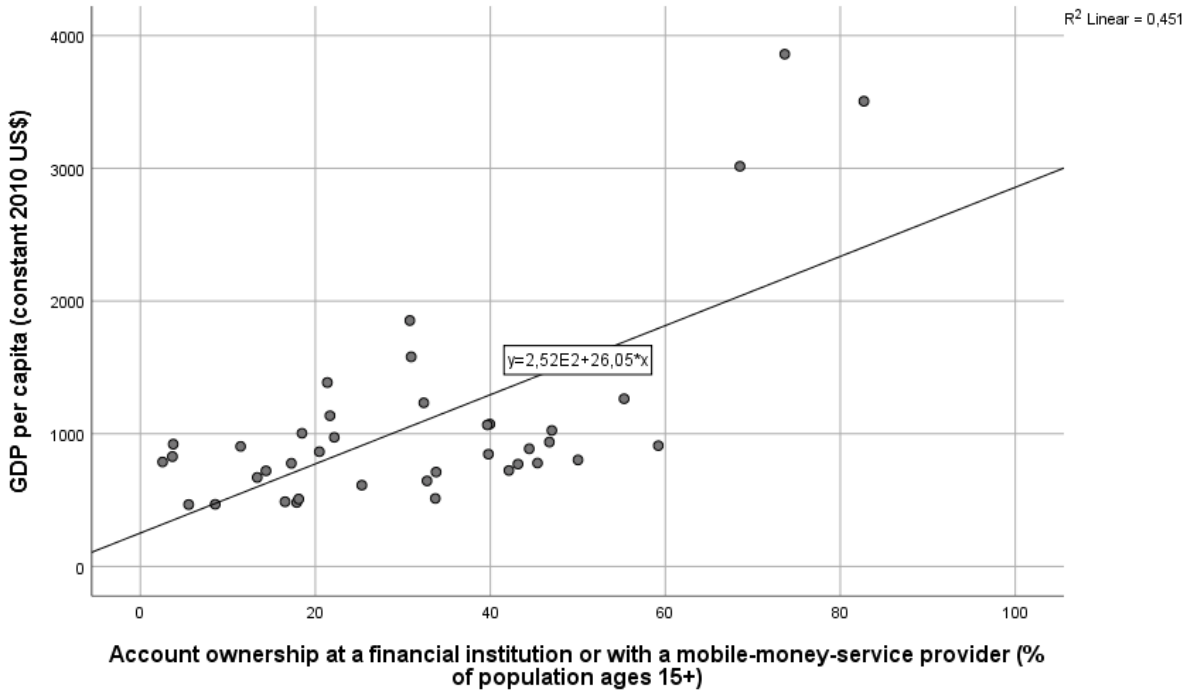

Figure 22. Part 1: Correlation between 'Account' and 'GDPpc'

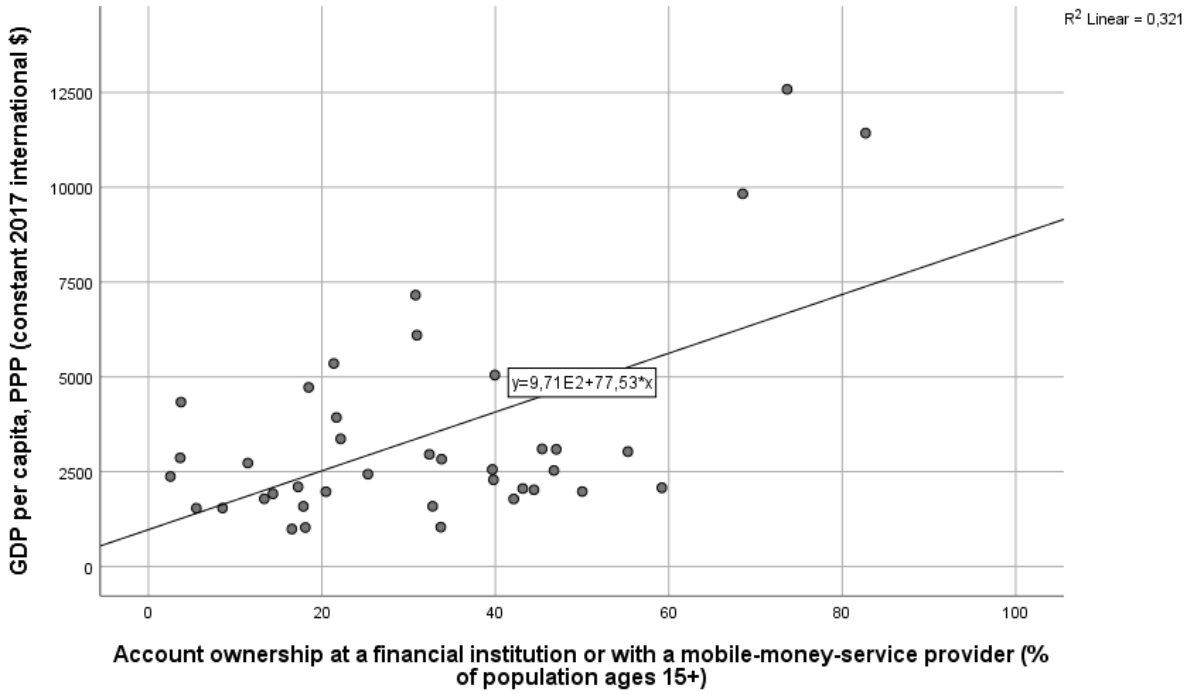

Figure 23. Part 1: Correlation between 'Account' and 'GDPpcPPP'

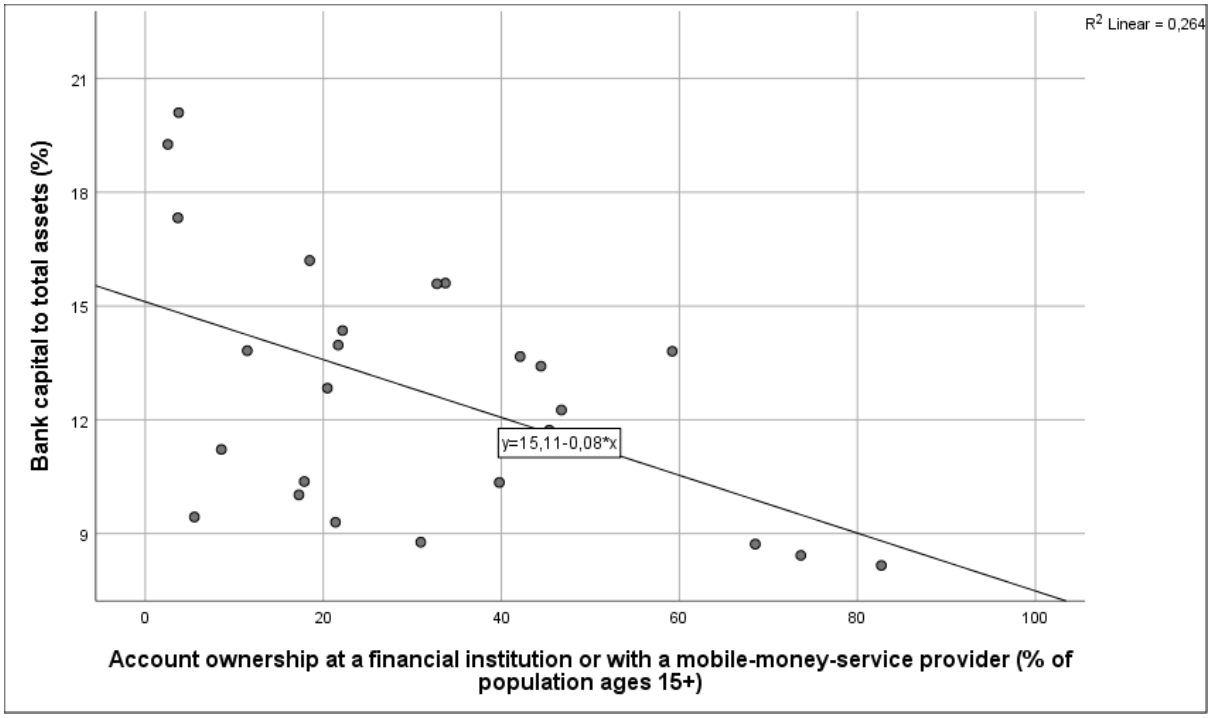

Figure 24. Part 1: Correlation between 'Account' and 'Bank capital'

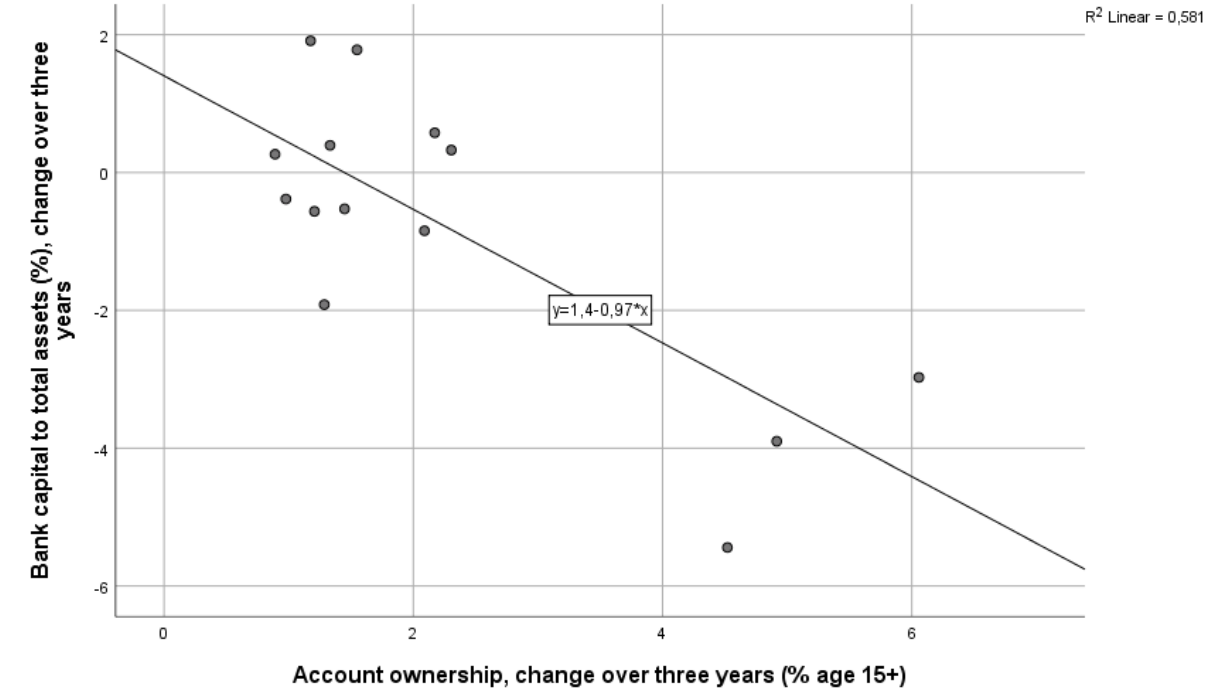

Figure 25. Part 1: Correlation between 'Account – Difference' and 'Bank capital – Difference'

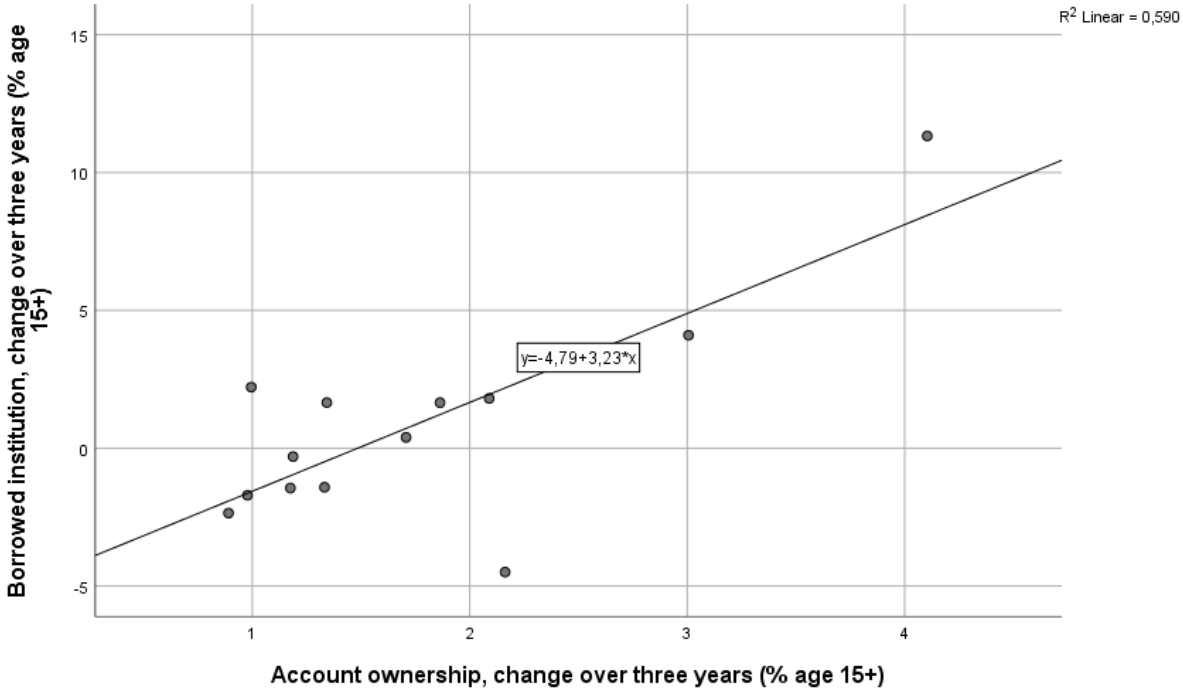

Figure 26. Part 1: Correlation between 'Account – Difference' and 'Borrowed informal – Difference'

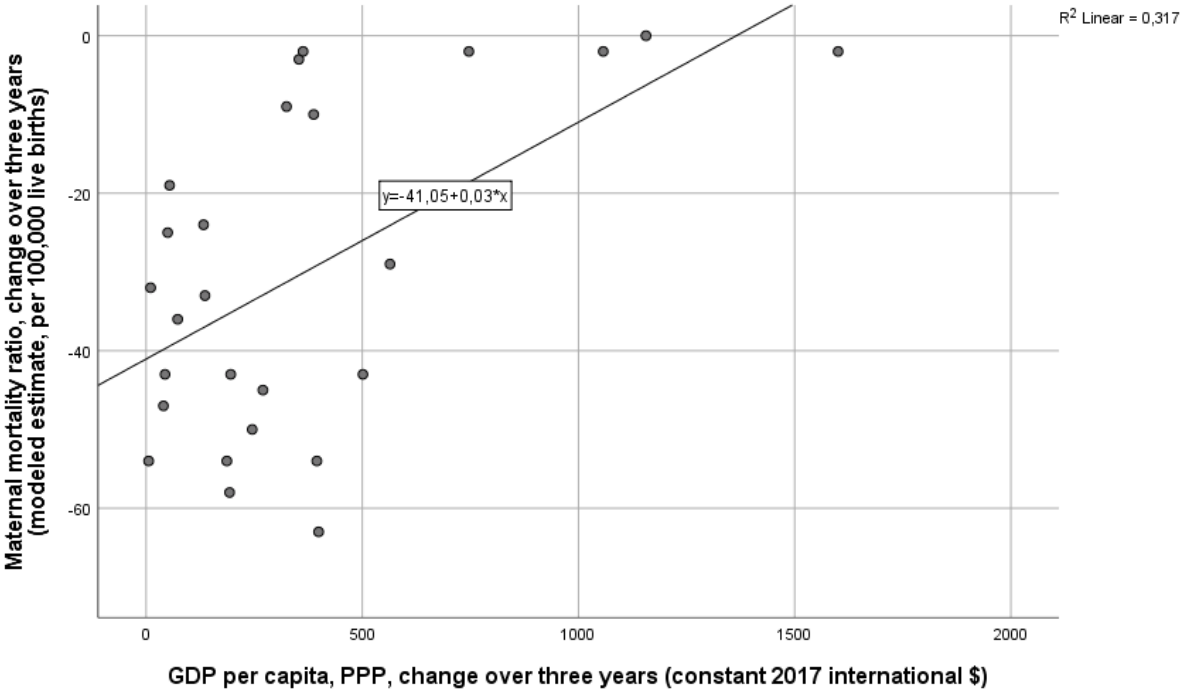

Figure 27. Part 1: Correlation between 'GDPpcPPP – Difference' and 'Mortality ratio – Difference'

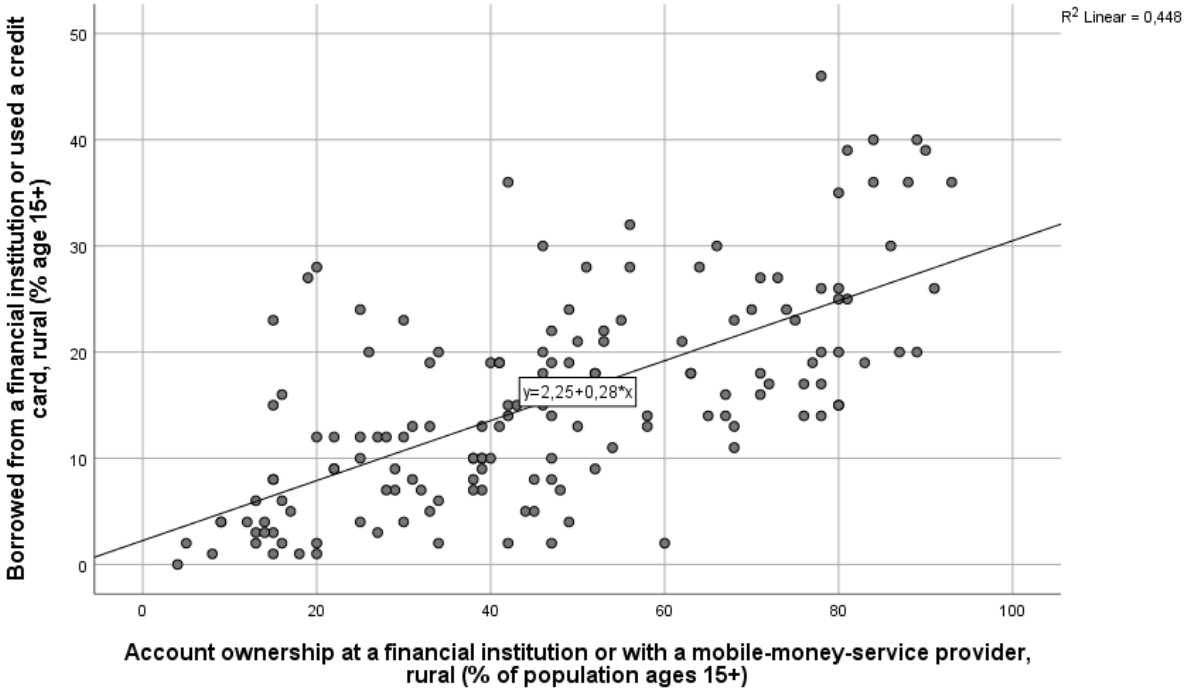

Figure 28. Part 2: Correlation between 'Account, rural' and 'Borrowed institution, rural'

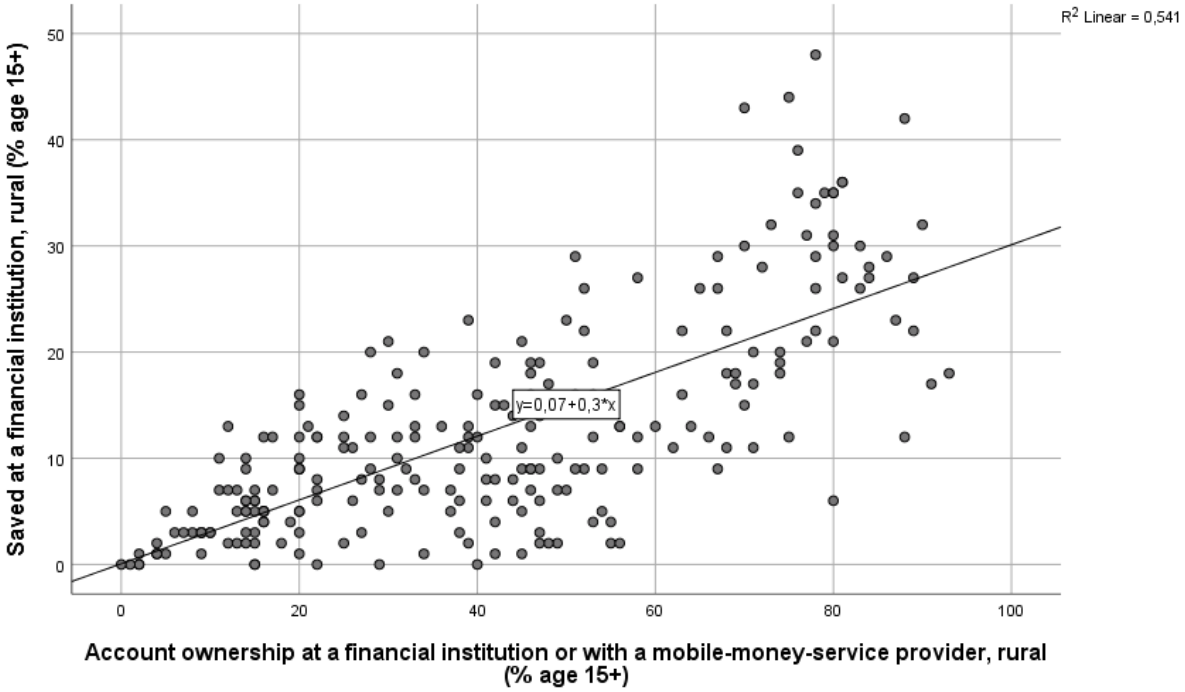

Figure 29. Part 2: Correlation between 'Account, rural' and 'Saved, rural'

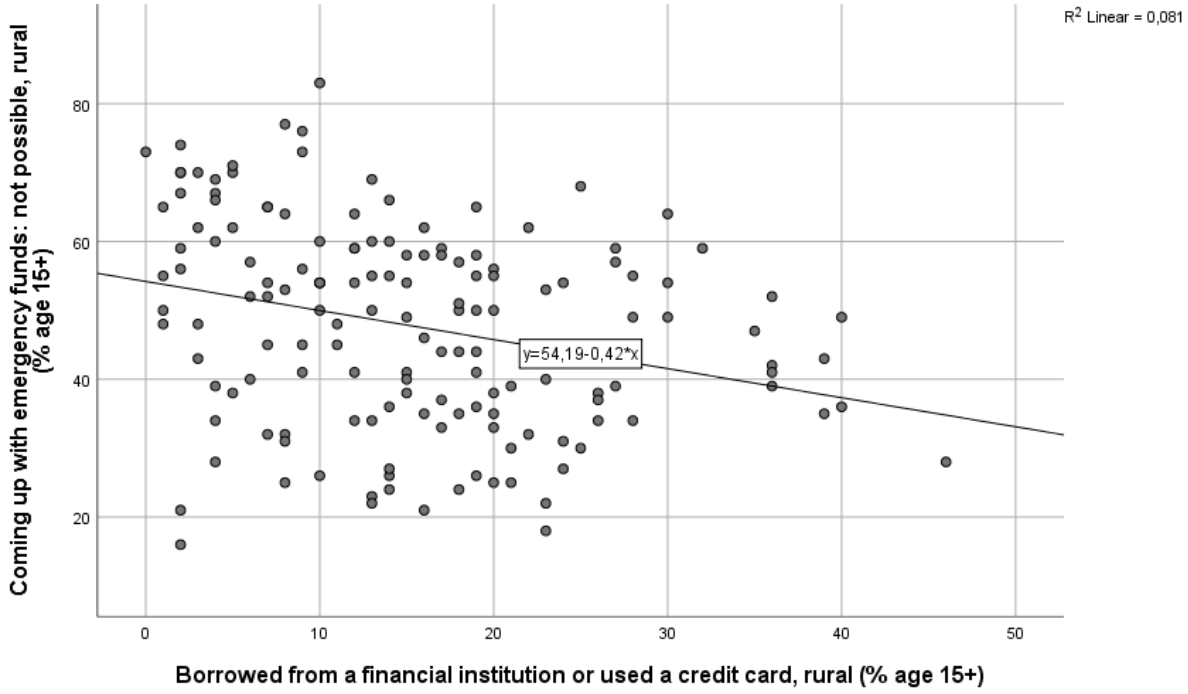

Figure 30. Part 2: Correlation between 'Borrowed institution, rural' and 'No emergency funds, rural'

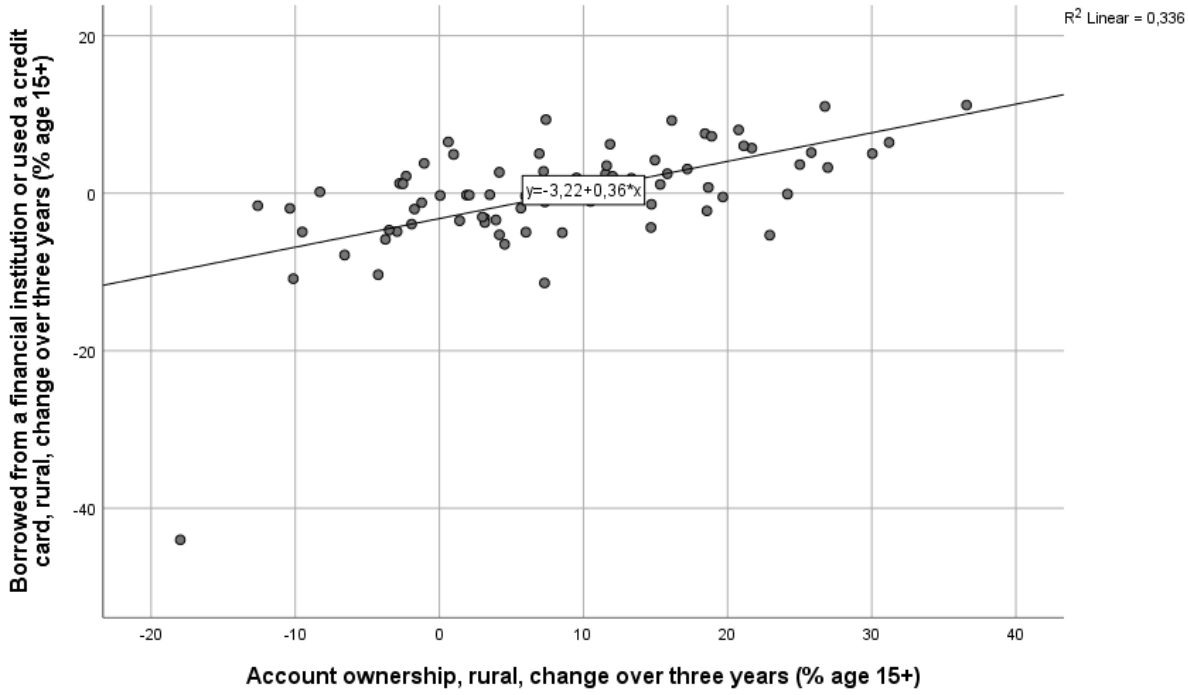

Figure 31. Part 2: Correlation between 'Account, rural – Difference' and 'Borrowed institution, rural – Difference'

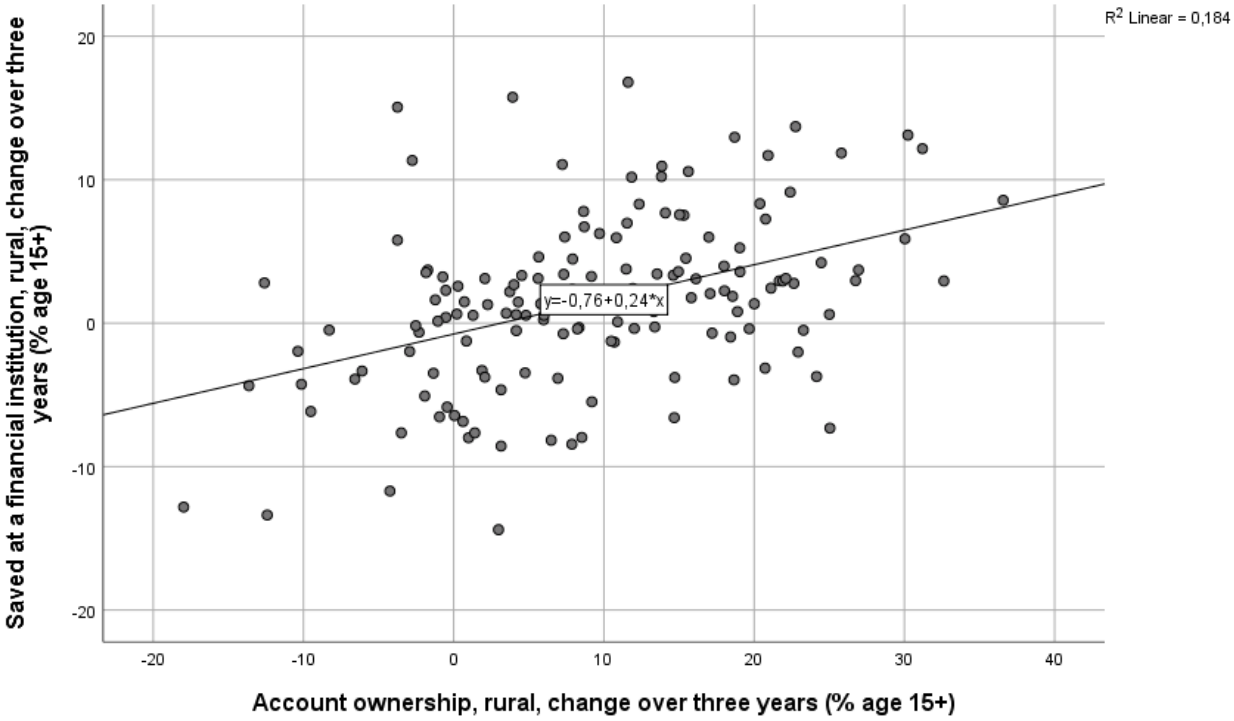

Figure 32. Part 2: Correlation between 'Account, rural – Difference' and 'Saved, rural – Difference'

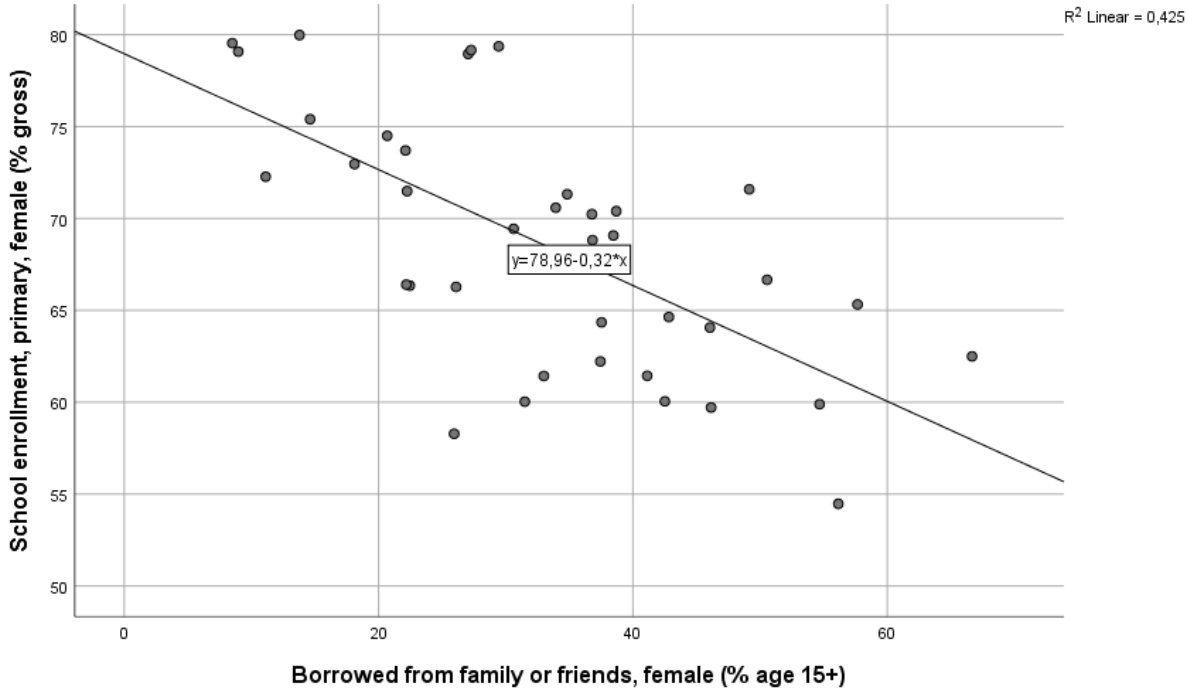

Figure 33. Part 3: Correlation between 'Borrowed informal, female' and 'Education, female'

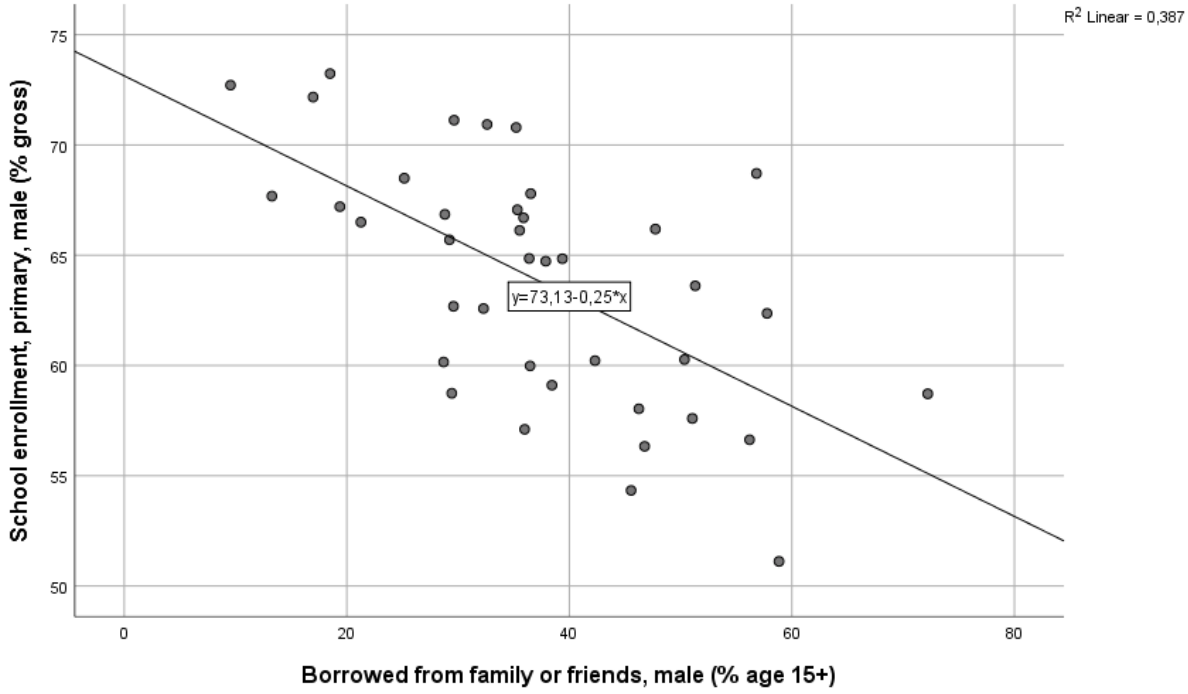

Figure 34. Part 3: Correlation between 'Borrowed informal, male' and 'Education, male'

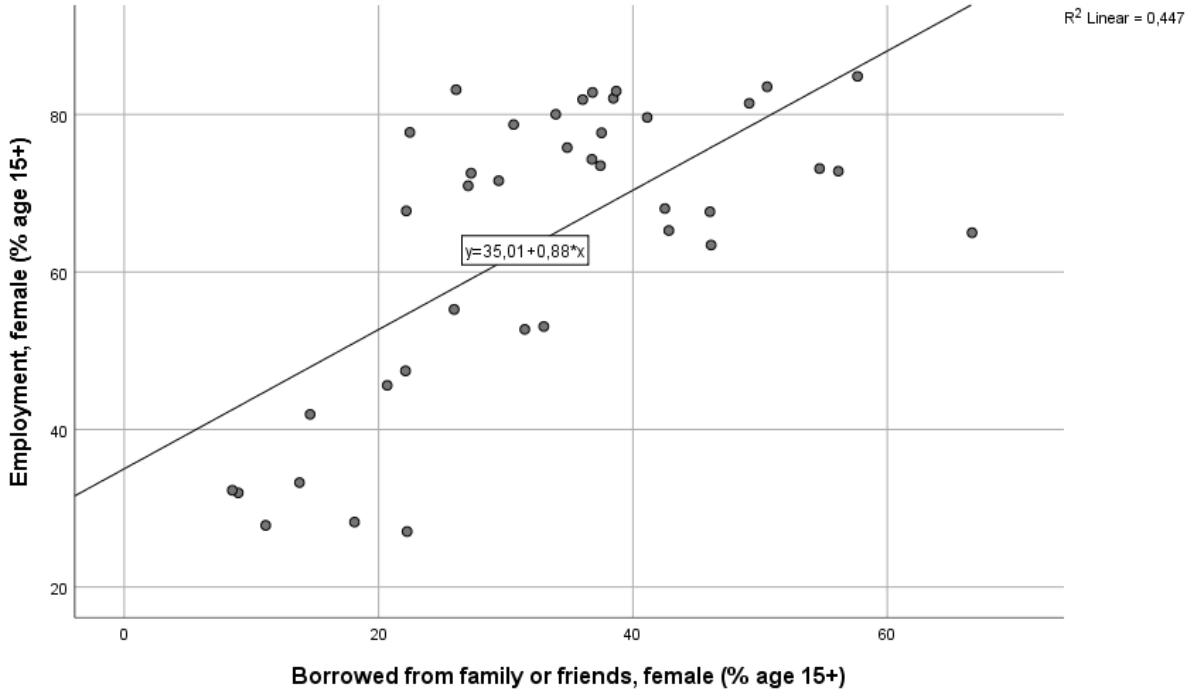

Figure 35. Part 3: Correlation between 'Borrowed informal, female' and 'Employment, female'

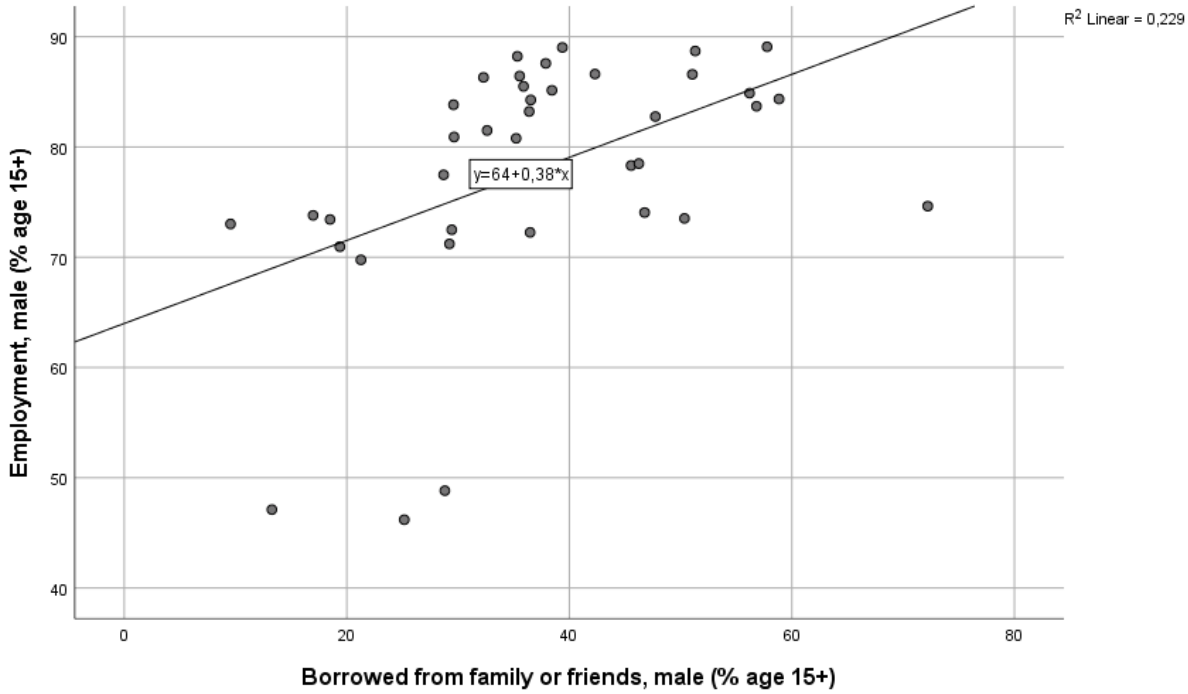

Figure 36. Part 3: Correlation between 'Borrowed informal, male' and 'Employment, male'

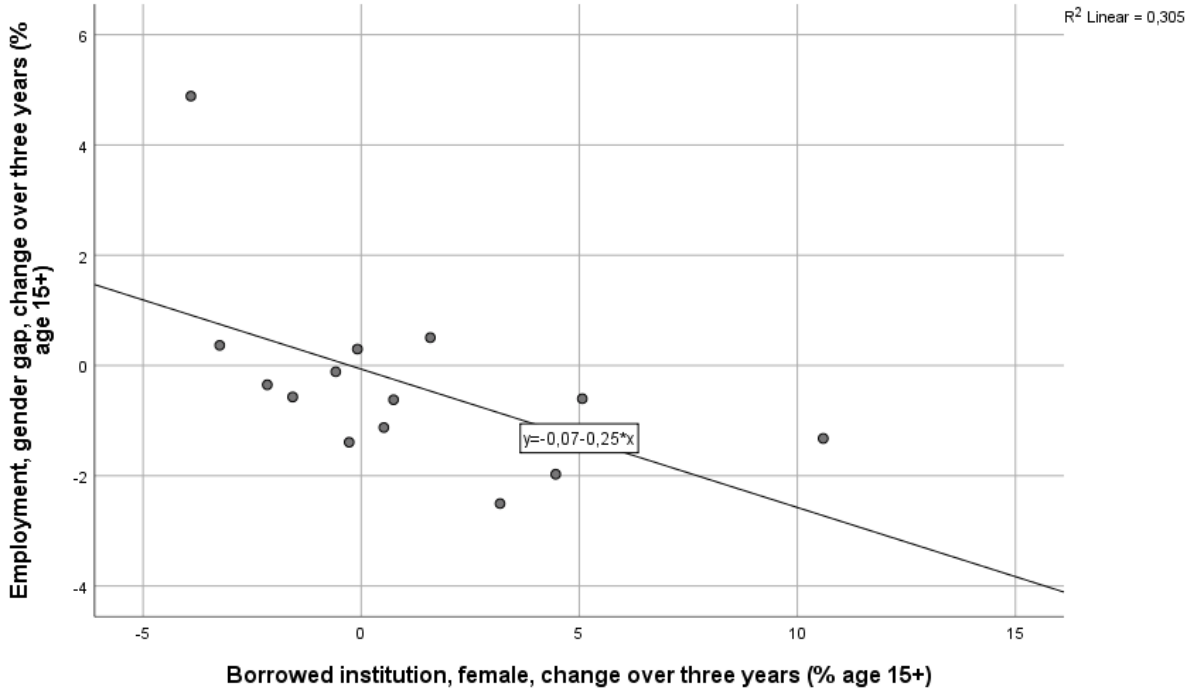

Figure 37. Part 3: Correlation between 'Borrowed institution, female – Difference' and 'Employment, gender gap – Difference'

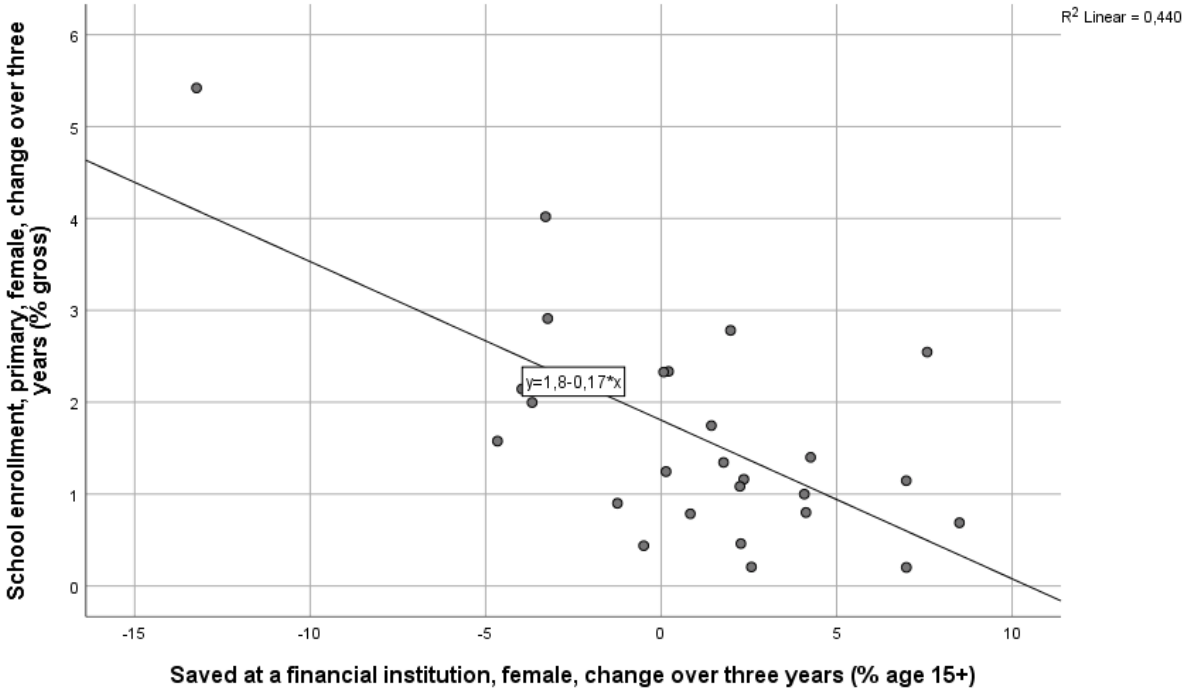

Figure 38. Part 3: Correlation between 'Saved, female – Difference' and 'Education, female – Difference'

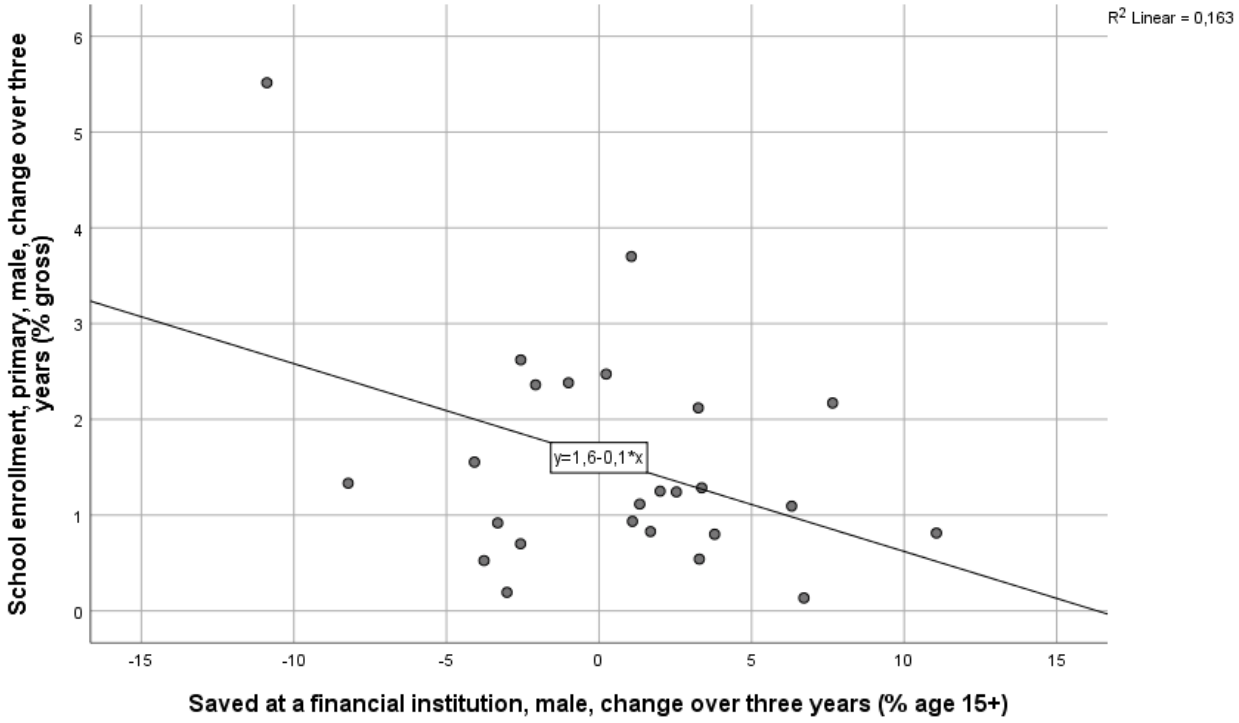

Figure 39. Part 3: Correlation between 'Saved, male – Difference' and 'School, male – Difference'

Appendix F. SDGs negatively affected by unsustainable economic growth

Table 31. SDGs negatively affected by unsustainable economic growth

SDG	Specific sub-SDG (United Nations, 2019a)	Economic growth negatively affects the SDGs when economic growth causes:
SDG 6. Clean water and sanitation	6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Pollution, dumping and release of hazardous chemicals and materials
SDG 7. Affordable and clean energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	Increased usage of nonrenewable resources such as oil, natural gas, and coal.
SDG 8. Decent work and economic growth	8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms	Forced labour and modern slavery
	8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment	Unsafe and unsecure working environments
	8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products	Unsustainable tourism
SDG 12. Responsible consumption and production	12.2 By 2030, achieve the sustainable management and efficient use of natural resources	Inefficient use of natural resources
	12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	Irresponsible management of chemicals and waste
SDG 14. Life below water	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities,	Marine pollution

	including marine debris and nutrient pollution	
	14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics	Overfishing
SDG 15. Life on land	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	Unsustainable use of terrestrial and inland freshwater ecosystems
	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	Unsustainable management of forests and deforestation
	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Loss of biodiversity