

The impact of financial integration on poverty, entrepreneurship, and financial inclusion

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Abstract

This thesis empirically explores the impact of financial integration, defined as unrestricted movement of capital across borders, on poverty, entrepreneurship, and financial inclusion. Its main contribution is to recognize the importance of decomposing financial integration into *de jure* (i.e. capital account liberalization) and *de facto* (i.e. actual capital mobility) components, and to investigate their potentially different impacts. *De facto* financial integration is further divided into different types of capital flows based on asset categories (e.g. foreign direct investment, remittances).

Chapter 1 provides a theoretical background for the empirical chapters, presenting the existing definitions, measures, and potential linkages between financial integration, poverty, entrepreneurship, and financial inclusion.

Chapter 2 investigates the effects of financial integration on poverty in developing countries. It concludes that *de jure* and *de facto* components of financial integration have opposite effects on poverty. More specifically, the obtained results indicate that capital account liberalization has positive effect on poverty alleviation, while the opposite effect is found for foreign direct investment inflows.

The influence of financial integration on opportunity- and necessity-driven nascent entrepreneurship is analysed in Chapter 3. Using multilevel multinomial modelling, it is reported that while the probability of becoming both types of nascent entrepreneurs seems to be reduced as a consequence of cross-border bank lending inflows and trade credit outflows, the probability of becoming an entrepreneur out of necessity is additionally lowered by MNEs entry and portfolio investment inflows. Foreign bank presence and trade credit inflows, on the other hand, turn out to be beneficial for both types of nascent entrepreneurs. The role of *de jure* financial integration is less clear as the evidence of positive impact of the overall openness index is very weak. More importantly, trade openness consistently appears to have a positive moderation effect on the financial integration relationship with nascent entrepreneurs, supporting the private interest theory of financial development by Rajan & Zingales (2003).

Chapter 4 studies the effects of financial integration on financial inclusion of households and Small and Medium-sized Enterprises. Using instrumental variable approach, it is found that Multinational Enterprises entry into non-financial sector has negative impact on the financial inclusion of both households and SMEs, while the opposite emerges for *de jure* financial integration. Households are additionally found to benefit from foreign bank presence and remittance inflows.

Impact statement

This thesis contributes to the international finance, development economics, and business research areas. With respect to international finance, it highlights the importance of jointly considering different types of financial integration in the empirical analysis as they can have opposite effects on various aspects of the economy. More specifically, it is necessary to separate *de jure* and *de facto* financial integration components as lifting capital account restrictions alone, even without an increase in capital flows, can already have a substantial and beneficial disciplining effect. The thesis also shows that *de facto* financial integration should be further decomposed into different types of capital flows based on asset categories as they are found to have different effects.

With respect to development economics, this thesis draws special attention on financial integration as an important factor of poverty alleviation and financial inclusion, two prominent concepts incorporated in the United Nations' Sustainable Development Goals. In both cases, relaxing controls on capital flows is proved to have significant positive effects, while the opposite is evidenced for foreign direct investment. Therefore, researchers studying poverty and financial inclusion should consider including financial integration measures in their empirical models. Additionally, the thesis enriches the small emerging body of literature on financial inclusion by conducting, for the first time, a cross-country panel data analysis, which allows to obtain more universal results compared to the existing cross-sectional and country-specific studies.

The main contribution of this thesis to the business literature is to provide, for the first time, a theoretical evaluation and empirical evidence of the effect of various types of financial integration on opportunity- and necessity-driven nascent entrepreneurs, as defined by the Global Entrepreneurship Monitor. Among capital flows, cross-border bank lending inflows and trade credit outflows are found to reduce the entry of both types of entrepreneurs. MNEs presence and portfolio investment inflows also appear to have a negative effect, but only on entrepreneurs starting a business out of necessity. On the contrary, foreign bank presence and trade credit inflows are proved to benefit both types of entrepreneurs. The evidence of positive impact of *de jure* financial integration is relatively weak, which does not allow to draw strong conclusions regarding the role of lifting capital account restrictions. Finally, it is evidenced that trade openness has a positive moderating effect on the financial integration relationship with nascent entrepreneurs.

The findings of this thesis also have important policy implications. With a better understanding of the mechanisms through which different types of financial integration

affect the economy, policy-makers can use financial integration as a tool to reduce poverty, boost entrepreneurial activities and encourage financial inclusiveness. For instance, relaxing capital flows restrictions has been consistently found to be beneficial due to its disciplining effects: an important finding for policy makers. On the other hand, governments should be careful with encouraging some types of capital flows they are repeatedly found to have negative effects (i.e. FDI into non-financial sector).

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Chapter 1: Theoretical background

1.1. Introduction

The end of the Bretton Woods era, marked by the departure from gold-dollar standard in 1971, allowed developed countries to gradually lift their controls on capital outflows. This, combined with the adoption of more liberal policies towards investors in developing countries, started the third wave of globalization in the early 1980s. The associated increase in international financial integration (FI), defined as unrestricted mobility of capital across borders¹, was initially expected to benefit capital-recipient countries. However, the repetitive occurrence of financial crises, including the 2007/2008 global financial meltdown, has led some to question whether there are any gains from opening up capital accounts.

The main interest of this thesis is to investigate the effects of financial integration on capital-recipient countries, focusing on the two groups that may require the capital the most: the poor and entrepreneurs. The impact on financial inclusion, a relatively new concept in the literature expected to positively impact poverty and entrepreneurial activities, is also analysed. One of the contributions of this thesis is to consider different types of financial integration and their potentially different outcomes.

To lay a theoretical ground for the later empirical analyses, this chapter provides a consolidated and in-depth examination of the different concepts and measures used to refer to the phenomena of interest here: namely financial integration, poverty, entrepreneurship, and financial inclusion. Additionally, the possible channels of influence, both positive and negative, are described. This chapter is organized as follows. The existing definitions and measures of financial integration are explored in Section 1.2 and 1.3, respectively. The poverty, entrepreneurship, and financial inclusion are presented in turn in Sections 1.3 – 1.7. Section 1.8 outlines the possible linkages between the four phenomena. Section 1.9 describes two hypotheses that explain the conditions under which financial integration become beneficial (i.e. composition hypothesis and threshold hypothesis). Section 1.10 provides an overview of a wide range of empirical methodology used in this thesis, followed by a conclusion in Section 1.11.

The next chapters provide each an empirical investigation of the effects of FI. Chapter 2 explores the effects of financial integration on poverty. Following the widespread view that poverty should be perceived differently depending on the country's stage of economic development, it focuses solely on developing countries due to their

¹ The genesis of this definition, as well as other concepts of financial integration, is discussed in Section 1.2.

continuously high incidence of poverty. Chapter 3 focuses on nascent entrepreneurship. To fill a gap in the literature, it creates an additional theoretical framework showing the possible direct and indirect channels of influence between financial integration and opportunity- and necessity-driven nascent entrepreneurship, followed by an empirical examination of these linkages. Chapter 4 evaluates a causal relationship between financial integration and financial inclusion of households and small and medium-sized enterprises (SMEs). Chapter 5 summarizes the key findings and concludes, recommending the best course of action for policy-makers.

1.2. Financial integration concepts

In order to determine the root of the concept of financial integration, it is necessary to go back to the 1760-70's, when French economists advanced the idea of the Law of One Price (LOOP) and applied it to the international trade context. The LOOP states that identical goods must have identical prices, regardless of their geographical location. The assumptions behind this concept are the lack of transaction costs and the absence of barriers to trade. Over time, the importance of LOOP has become comparable to the law of supply and demand, often regarded as the first law of economics (Lamont and Thaler, 2003).

The existence of LOOP is explained by the arbitrage mechanism, the first idea of which pertains to Adam Smith and appears in his famous book "The Wealth of Nations" published in 1776. The arbitrage mechanism takes place when, in the presence of price differences between two markets, the arbitrageur (a person realizing arbitrage) can get a riskless gain by buying the good in one market and selling it in the other, given that the two key assumptions outlined above hold (Kucukaksoy, 2011). The presence of an arbitrage opportunity attracts the attention of multiple market participants, who exploit it until the prices converge on a single price. In other words, the arbitrage mechanism leads to the fulfilment of LOOP.

The LOOP was initially applied to the international trade of goods and most of the existing literature still tends to analyse it in this context. However, with the emergence of world capital markets in the nineteenth century, the era of industrial revolution, the LOOP became applicable to the trade of financial instruments as well. The definition of LOOP was slightly modified to fit the financial market context. It states that assets with identical risks should command the same return, regardless of their geographical location. From the LOOP perspective, financial integration exists when the LOOP holds.

The attractiveness of LOOP lies in the fact that it facilitates the quantitative measurement of financial integration (Baele et al., 2004). However, it is criticized for neglecting an

important aspect of financial integration: the potential discriminatory practices that are faced by the supply of investment opportunities (ibid.). The LOOP does not account, for example, for situations when a foreign asset cannot be listed on a particular exchange because of discriminatory practices present in this exchange. In this case, although the law of one price may hold, there is still no financial integration.

To overcome the LOOP drawback, Baele et al. (2004) have developed a more general definition of financial integration. It states that the market, for a given set of financial instruments and/or services, is fully integrated if all potential market participants with the same relevant characteristics²:

- 1) face a single set of rules when they decide to deal with those financial instruments and/or services;
- 2) have equal access to the above-mentioned set of financial instruments and/or services;
- 3) are treated equally when they are active in the market.

This definition encompasses the LOOP. For instance, if the LOOP does not hold, then arbitrage opportunities arise and are exploited by any investors until the LOOP becomes valid. Therefore, the existence of non-discriminatory investment of capital, which allows any investors to participate in the market, helps to achieve the LOOP.

The alternative approach to defining financial integration is provided by the globalization concept, which became popular in the 1990's. Globalization is a multi-dimensional phenomenon, defined as the international integration of economies, politics, societies, and cultures. Economic integration occurs through trade, migration, and capital movement (World Bank, 2002). Therefore, from the globalization perspective, financial integration exists when there is an unrestricted movement of capital across borders. As defined by Obstfeld (1993), "capital is freely mobile within a multi-country region when its residents face no official obstacles to the negotiation and execution of financial trades anywhere and with anyone within the region, and face transaction costs that are no greater for parties residing in different countries than for parties residing in the same country" (p. 2). The definition implies that the government's role is limited to the provision of a legal framework for contract enforcement.

As pointed out by Prasad et al. (2003), it is important to distinguish the difference between *de jure* and *de facto* financial integration. The former is associated with policies on capital account liberalization, while the latter refers to actual capital movements. This

² Baele et al. (2004) does not provide a list of "relevant characteristics", but it can be assumed that participants should have a similar risk profile, such as risk averse, risk taker, and risk neutral.

distinction is particularly important in the light of Jinjark et al. (2013)'s findings. They report that the increase of capital control on inflows in Brazil imposed during the recent Global Financial Crisis does not have much impact on the volume of mutual funds' capital inflows. The mild controls are concluded to be effective only if they provide a signal regarding the government's larger policy trajectory. The reported weak relationship between *de jure* and *de facto* financial integration raises a question whether the two types of FI can have a different effect on an economy³, the first and main research question of this thesis.

The World Bank distinguishes three waves of globalization in recent history. The first wave of globalization, 1870-1914, was a result of: (1) falling transport costs due to the invention of steamships and railways, (2) the decrease of tariff barriers, and (3) the mitigation of information asymmetry arising from progress in communication technology, such as the transatlantic cable and radio telephone (World Bank, 2002; Bordo et al., 1999). The lifting of natural and man-made barriers enabled the use of the abundant land in developing countries for primary commodity production and subsequent export. As this activity required high amounts of capital, developing countries had to rely on foreign capital. According to the World Bank (2002), thanks to better institutions in developing countries and rapid information flows, foreign capital stock in developing countries increased from 9% of income in 1870 to 32% in 1914.

The first wave of globalization was interrupted by World War I. The Great Depression that followed in the inter-war period gave rise to an era of protectionism, which unwound the progress of globalisation created in the first wave. During the retreat into nationalism, capital flows were limited because of the controls imposed by developed countries. At that time, authorities in developed countries were suspicious of any investments abroad (Obstfeld and Taylor, 2003). The lack of continuous foreign capital inflow forced numerous developing countries to default on their liabilities and by 1950 their foreign capital stock decreased to the level of 4% of their income (World Bank, 2002).

After the end of World War II in 1945, the disastrous consequences of the retreat into nationalism encouraged governments to adapt internationalism, marking the start of the second wave of globalization. The Bretton Woods Conference in 1944, during which the

³ The effects of *de jure* and *de facto* FI are analysed separately in Section 1.8.

International Monetary Fund⁴ and the World Bank⁵ were established, was the major attempt to rebuild the global economy (Obstfeld and Taylor, 2003). To stabilize exchange rates, the leaders of 44 Allied nations decided to tie their national currencies to the US dollar, which in turn was convertible into gold at a fixed rate of \$35 per ounce. The fixed exchange rate regime was introduced to facilitate international trade. As part of the Bretton Woods system, capital controls were adopted as a permanent feature of the global economy; only long-term lending and borrowing were not restricted (Rodrik, 2010). The IMF allowed capital controls as they helped to preserve a fixed exchange rate peg, which in turn prevented currency crises and runs (Obstfeld and Taylor, 2003). As a result, the second wave of globalization did not restore the international movements of capital. Furthermore, developing countries were left out of the current account transactions (World Bank, 2002)⁶ and so the stock of foreign capital in developing countries was only slightly in excess of 10% of GDP in the mid-1970s (World Bank, 2002).

The third and current wave of globalization started in around 1980. The end of the Bretton Woods era, marked by the departure from gold-dollar standard in 1971, allowed developed countries to gradually lift their controls on capital outflows. This, combined with the adoption of more liberal policies towards investors in developing countries and the oil shock of the 1970s, caused a significant increase of capital flow to a large group of developing countries. The foreign capital stock in developing countries reached 22% of GDP in 1998 (World Bank, 2002).

The analysis of three waves of globalization shows that there are two main differences between financial integration definitions provided by the globalization literature and Baele et al. (2004). First, they differ in their perception of official restrictions. According to the globalization literature, *de jure* financial integration relates to the removal of official barriers that hamper cross-border capital flows. Baele et al. (2004), on the other hand, do not stress the disappearance of frictions and barriers, but recognize that they should affect all, both domestic and foreign, market participants equally. Second, Baele et al.'s (2004) definition is broader, allowing for the assessment of financial integration on different levels. For instance, it can be employed to examine financial integration at the

⁴ The IMF's initial task was to oversee the international monetary system, including exchange rate stabilization and exchange restrictions elimination. Currently, its goals are "to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world" (IMF, 2012).

⁵ The World Bank's initial goal was to assist in post-war reconstruction. This goal has evolved into poverty reduction in the present day (World Bank, 2012).

⁶ For instance, while the trade barriers for manufactured goods from other developed countries were reduced, only some primary commodities from developing countries, which were not seen as a threat for the agriculture sector in developed countries, were traded freely. Furthermore, besides facing trade barriers imposed by developed countries, developing countries themselves imposed barriers on foreign products.

sector level. The definition stemming from the globalization literature, in contrast, is only compatible with macro-level study.

Despite the differences, there is one important similarity between the definitions: they each encompass the LOOP. When assets with similar characteristics are priced differently in different countries, arbitrage opportunities arise. In the presence of free capital movement across borders, these opportunities are freely exploited by both domestic and foreign investors. As explained before, the arbitrage mechanism leads to a convergence of asset prices until one single price is achieved, which fulfils the LOOP.

Having analysed the existing definitions of financial integration, I find that the definition provided by the globalization literature is the most suitable for studying my research question given that: first, it allows for establishing the linkages between financial integration, poverty (looking at both incidence and depth), entrepreneurship, and financial inclusion (discussed in more detail in Section 1.8); second, it is primarily applicable to studying the international context, which is in line with the macro-level nature of this thesis.

1.3. Financial integration measures

1.3.1. Financial integration measuring framework

As mentioned in Section 1.2, from the globalization literature perspective, financial integration measures can be *de jure* or *de facto*, where *de jure* measures deal with policies on capital account liberalization and *de facto* measures capture actual capital flows. Despite providing a conceptually distinct definition of financial integration, Baele et al. (2004) recognize that “the best way to measure the current state of financial integration would be to list all frictions and barriers to financial integration and check whether or not they still hold” (p. 11). They also acknowledge that constructing such a list, especially where cross-country comparisons are involved, proves very challenging. Therefore, *de jure* measures to some extent are related to Baele et al.’s (2004) point of view as they are a list of restrictions imposed on cross-country capital movements.

Measures of *de facto* financial integration, on the other hand, deal with the actual capital movement across countries. There is a common framework for measuring *de facto* financial integration. The three broad categories of measures are distinguished in this framework: price-based measures, news-based measures, and quantity-based measures. The first two categories follow from the law of one price, while the quantity-based measures are perceived to be direct measures of capital mobility. A brief description of each category is given below.

The price-based measures stem directly from the LOOP. If assets have similar characteristics, they should be priced identically. In this case, using the price-based measures involves a direct comparison of asset prices or returns (Baele et al., 2004). The presence of discrepancies caused by geographic origin of the assets indicates a lack of financial integration. The price-based measures are appropriate for money and government bond markets as their cash flow and risk characteristics are sufficiently comparable (Baltzer et al., 2008).

The news-based measures distinguish the information effects from other frictions or barriers. In financially integrated markets, portfolios are well diversified, making asset prices more resistant to local news. This is caused by the fact that international investment opportunities allow local shocks to be diversified away. Financial integration causes asset prices to react only to common or global news. Therefore, using news-based measures of financial integration involves assessing the proportion of asset price variations that is caused by common factors. The greater is the proportion, the higher is the degree of financial integration.

Lastly, the quantity-based measures allow us to “quantify the effects of frictions faced by the demand for and supply of investment opportunities” (Baele et al., 2004, p. 21). These measures are based on stocks and flows of assets. Financial integration should increase finance supply in the less financially developed markets and lead to increased cross-border investments among countries.

There are also some indirect measures of *de facto* financial integration that do not fit into the abovementioned common framework. Although they have lost their popularity in the last decades, it is worth mentioning the two measures that played significant role in the financial integration literature in 1980s: saving-investment relation and consumption. The first measure, developed by Feldstein and Horioka (1980), is based on the assumption that the existence of “perfect” global capital mobility leads domestic saving and domestic investment to be unrelated. Domestic saving in this case, the authors argue, is dictated by the worldwide opportunities of investment, while domestic investment is financed by the world’s pool of capital. As a result, domestic saving rate is unrelated to domestic investment rate. If capital mobility across borders is restricted, an increase in domestic saving should be reflected in an increased domestic investment.

The sound logic of saving-investment approach was appealing to numerous empirical researchers. However, a series of counter-intuitive findings⁷ led some to question

⁷ For example, while Feldstein and Horioka (1980) find high saving-investment correlations in industrial countries, Montiel (1994) report low correlations for substantial number of developing

whether Feldstein and Horioka's approach was appropriate for measuring international capital mobility. In an attempt to answer this question, researchers have pointed at multiple potential explanations⁸. From the macroeconomic perspective, for example, both real and nominal interest rate parity must hold in order to achieve uncorrelated saving and investment rates. While capital mobility equalizes nominal rates of return, an inadequate substitutability in goods markets across countries does not allow PPP to hold. Hence, high saving-investment correlation can be a result of imperfect goods market integration, not low international capital mobility (Mussa and Goldstein, 1993).

In theory, one of the benefits of international capital mobility is consumption smoothing, achieved by borrowing or diversifying abroad, as well as by directing world savings to the world's most productive investment opportunities. Hence, consumption can be used as an indirect measure of cross border capital mobility and one of the most popular practices is to analyze cross-country consumption correlations. However, similarly to saving-investment relation, consumption correlation has also produced mixed and rather unreliable results⁹. As explained by Obstfeld (1993), even with perfect capital mobility, there might be low correlations between consumptions of different countries caused by incomplete financial markets, unexploited opportunities for risk sharing, and non-insurable events (such as job loss).

As both saving-investment correlation and consumption correlation have been proved to have weak links with international capital mobility, they should not be used as measures of financial integration. Among the measures from the common measuring framework, the quantity-based measures are the most appropriate for purpose of this study. There are two main reasons behind this statement. First, both the price-based and news-based measures are based on the LOOP, which in practice should only be applied to listed or quoted instruments (Baele et al., 2004). Since most of the developing countries have undeveloped or non-existent exchanges, unlisted instruments should also be considered when assessing financial integration in these countries. Second, returns on financial instruments in developing countries may include risk and liquidity premia that are difficult to quantify¹⁰ (Kose et al., 2006). Therefore, even when there are arbitrage opportunities in these countries foreign investors may still not be willing to exploit them due to lack of depth and liquidity in their financial markets.

countries. These findings suggest that developing countries are more financially open than developed countries.

⁸ see Mussa and Goldstein (1993) for details.

⁹ See Obstfeld (1993) for details

¹⁰ An example of unquantifiable risk is inappropriate corporate governance practices. Liquidity problem may be caused, for example, by the difficulty in creating an enforceable contract.

1.3.2. *De jure and de facto measures*

This section provides a description of the existing *de jure* and *de facto* financial integration measures. As explained in the previous section, among *de facto* measures, the quantity-based measures are the most suitable for the purpose of this study. Hence, the section on *de facto* financial integration below focuses only on the quantity-based measures, namely the capital flows and stock data.

1.3.2.1. *De jure measures*

Most of the existing *de jure* measures of financial integration are computed based on the information contained in the IMF's Annual Report on Exchange Rate Arrangements and Exchange Restrictions (AREAER). Until 1995, the AREAER reported binary indicators¹¹ in the following categories: the openness of a country's capital account, the openness of the current account, the stringency of requirements for the repatriation and/or surrender of export proceeds, and the existence of multiple exchange rates for capital account transactions (Schindler, 2009). In 1995 the AREAER introduced a new classification scheme which further disaggregates the four categories. The new scheme distinguishes between different asset transactions (e.g., money market instruments, shares, direct investments), direction of transactions (inflows and outflows), as well as the residency status of market participants (residents and non-residents) (Johnston and Tamarisa, 1998).

Many researchers measure *de jure* financial integration simply using the capital account openness dummy or by developing a binary index that is a combination of the capital account and current account restrictions¹² reported in AREAER (Chinn and Ito, 2008). The advantage of this practice is its broad country and time coverage, as AREAER has been published since 1967 and covers up to 184 countries (Schindler, 2009). However, there are two drawbacks of using binary indices. First, their binary nature only enables the detection of the incidence of restrictions, not the intensity of controls (Alesina et al., 1993). Second, binary indices are too aggregated to capture subtleties of actual capital account restrictiveness (Chinn and Ito, 2008; Edwards, 2001). For example, capital controls can differ according to the direction of capital flows.

Many researchers have therefore attempted to develop *de jure* measures that capture the intensity of controls. Montiel and Reinhart (1999), for example, have developed an

¹¹ Where 1 denotes restricted, 0 denotes unrestricted.

¹² For example, Alesina et al. (1993) use a capital control binary variable that is based on information reported in AREAER to study institutional and political determinants of capital controls. Rodrik (1998) also uses a binary variable to study the relationship between financial openness and economic performance.

index on the intensity of capital controls by combining the AREAER's and country specific information. Their indicator ranges from 0 to 2 with increments of 1, where a higher number denotes stronger restrictions. Montiel and Reinhart (1999) provide data for 15 emerging countries during the 1990-1996 period. Although the Montiel-Reinhart indicator is better in capturing the actual nature of controls than the binary indices mentioned above, Edwards (2001) argues that it is still too general to capture the subtleties of actual capital restrictions.

Quinn (1997) is recognized as having successfully developed an intensity measure of capital controls. Specifically, his composite measure is based on narrative descriptions in the AREAER and ranges from 0 to 4 with increments of 0.5, where 4 denotes the least regulated regime. Quinn's (1997) dataset covers 64 countries (20 OECD and 44 non-OECD countries) for the period 1958-1989. Besides the advantage of not being restricted to a binary classification, the Quinn index is praised for covering a long period of time (Edwards, 2001). This allows us to analyze the long-term impacts of reduced capital controls. However, since the dataset covers the years up to 1989, it does not allow an examination of more recent trends, including within the third wave of globalisation.

Mody and Murshid (2005) construct a financial integration index as a sum of four binary measures of government restrictions reported in the AREAER. Therefore, their index takes values between 0 and 4, where 4 indicates an open regime. The Mody and Murshid (2005) dataset covers 60 countries for 1979-1999. Chinn and Ito (2008) construct a similar composite measure (called KAOPEN) from the same AREAER categories, using the principal components approach. So far, the biggest contribution of KAOPEN stems from the wide coverage of countries and time period¹³. Moreover, as the dataset is constantly updated, it allows us to study more recent trends. Both the Mody-Murchid index and KAOPEN have been criticized for failing to measure capital account openness in a narrow sense as three of their underlying indicators are not directly related to capital account transactions (Schindler, 2009). However, Chinn and Ito (2008) argue that the intensity of capital controls is correlated with the existence of other restrictions on international transactions. For example, a country with an open capital account may still restrict capital flows by introducing export quotas. Hence, by including the non-capital account transactions restrictions, the intensity is more accurately captured.

Unlike the researchers mentioned earlier, Schindler (2009)¹⁴ has developed a new measure of *de jure* financial integration using the detailed information on capital transaction restrictions provided in AREAER since 1995. The measure includes

¹³ As of September 2015, KAOPEN covers 182 countries and the period 1970-2013.

¹⁴ The dataset was later extended by Fernandez et al. (2015)

information from 6 AREAER categories, which are strictly related to capital account restrictions¹⁵. Although the AREAER provides the binary indicators for individual transactions, the aggregation of the indices along various dimensions (asset category, residency, direction of flows) allows us to successfully measure the intensity of a country's capital controls. As explained by Schindler (2009), the aggregations cover the number of capital transactions categories reported to be restricted, as well as the number of restricted transactions 'types' within each category. Since the Schindler index can be constructed using only the detailed information provided under the AREAER new classification scheme, the dataset can be developed only for 1995 onwards.

Although there is an increase in the level of technical sophistication in constructing *de jure* financial integration measures, as pointed out by Kose et al. (2006) these measures still suffer from some drawbacks. First, they fail to capture the level of capital controls enforcement, as well as its effectiveness. Second, *de jure* measures do not show a country's actual level of integration to the global capital markets. Although it is perceived that limiting restrictions on cross-border capital movement is the precursor of *de facto* financial integration (Prasad et al., 2003), this is not always the case. For example, in some African countries there are few formal capital account restrictions, but their actual capital flows are still low. Third, AREAER do not cover regulations that can act as capital controls and therefore, is not the ideal source of data¹⁶. For example, prudential regulations aimed at mitigating foreign exchange risk in the domestic banking sector can discourage domestic banks from investing in foreign countries.

In the light of the shortcomings of these *de jure* measures, many researchers prefer to use *de facto* measures in their studies. They argue that "after all, what matters in analyzing the effects of financial integration, is not how integrated economies seem on paper, but how integrated they are in practice" (Kose et al., 2006, p. 8). The more detailed description of *de facto* measures is provided in the next section.

1.3.2.2. De facto measures

Based on the capital sources, capital flows can be de-composed into official and private flows (Williamson, 2001). Official flows often take the form of grants or highly concessional loans from multilateral development banks (MDBs), such as the World Bank, as well as bilateral aids from developed countries. Official flows may not be an appropriate proxy for financial integration as their direction is not always dictated by

¹⁵ The categories are as following: shares or other securities of a particular nature, bonds or other debt securities, money market instruments, collective instruments, financial credits, and direct investment.

¹⁶ It is possible to use data from the Code of Liberalization of Capital Movements published by the OECD every other year, but the data is limited to the OECD member countries only.

economic incentives. In fact, Alesina and Dollar (2000) found that the major determinants of foreign aids are colonial past and political alliances. They concluded that aids are just a means of promoting donor's strategic interests and are just partially successful at promoting economic growth and reducing poverty.

Alesina and Dollar (2000) report that private flows, on the other hand, react to the rule of law and good economic policy of recipient countries. Moreover, they are indifferent to strategic considerations. Hence, in this paper only private flows will be used as proxies for financial integration. They can be further divided into foreign direct investment (FDI), cross-border bank lending, and portfolio investment¹⁷. The types of private capital flows and related issues are presented in the below.

According to the IMF (1993), FDI "reflects the objective of a resident entity (called "direct investor") in one economy obtaining a lasting interest in an enterprise (called "direct investment enterprise") resident in another economy" (p. 86). The "lasting interest" means the existence of a long-term relationship, as well as the investor's significant influence in the management of an enterprise. FDI includes both greenfield investment, an initial transaction establishing a long-term relationship, and equity participation giving a controlling stake (usually the ownership of 10% or more of the ordinary shares or voting power).

Portfolio investment is further divided into portfolio equity investment and portfolio debt investment (IMF, 1993). The former includes equity purchases that do not give a controlling stake. Portfolio debt investment covers three categories of financial instruments: bonds and notes, money market instruments, and financial derivatives. A holder of bonds and notes has the right to receive a fixed or a pre-determined variable money income until the instrument's maturity date, as well as a right to receive a repayment of principal at the maturity. Money market instruments are usually traded at a discount and allow a holder to receive a fixed money income at the maturity date. They include, for example, treasury bills and bankers' acceptances. Financial derivatives are linked to an underlying asset that can be purchased or sold at a future date. These include other financial instruments, indicators (e.g., interest rates, foreign exchange rates), and commodities. The most popular derivatives are futures and forwards, options, and interest rate swaps.

Cross-border bank lending comprises financial assets that are created through direct lending of funds by non-resident banks to domestic debtors. Unlike FDI and portfolio

¹⁷ In some of the empirical chapters (i.e. Chapter 3 and 4), remittance inflows are also studied as part of financial integration. However, remittances should be considered to be informal types of flows related to migration, another dimension of globalization.

equity investment, bank loans can be classified based on their maturity period: short-term loans (below one year) and long-term loans (above one year).

Financial integration can be proxied by both capital inflows and outflows as it indicates the ability of foreigners to invest in a country, as well as the ability of domestic residents to invest abroad. While the capital inflows are perceived to be beneficial for a recipient country, capital outflows are considered to be a risk. Policy makers usually fear that capital flight or international portfolio diversification lower the domestic savings needed to finance investment at home, leading to slower economic growth (Williamson, 2001). Furthermore, in the case of expropriation or high inflation, capital flight can lead to abnormal losses (Williamson, 2001). On the other hand, capital outflows can be beneficial when, for example, domestic companies invest in technology-oriented businesses overseas. This kind of outward FDI may generate technological spillovers within the source economy, as an investing company can bring know-how back to the country.

Some researchers suggest that the stock data can be a better indicator for financial integration than the underlying flows. There are four key arguments in favour of stock data. First, many benefits of financial integration are tied to gross holding of foreign assets and liabilities and hence, cannot be captured by capital flows (Lane and Milesi-Ferretti, 2001). Second, stocks are closer to the concept that financial integration indicates both the ability of foreigners to invest in a country and the ability of domestic agents to invest abroad (Masten et al., 2008). Third, the composition of equity and debt in international investment positions may allow for the assessment of a country's vulnerability to external shocks and the degree of cross-border risk sharing (Lane and Milesi-Ferretti, 2001). Fourth, stock data is less volatile from year to year and is less prone to measurement errors (Prasad et al., 2003).

As with capital flows, stock data is relatively easy to access. The international investment position is provided in, for example, the IMF's Balance of Payments Statistics (BoP). However, although BoP provides direct measures of the stocks of external assets and liabilities, the time and country coverage for this data is relatively limited compared to the capital flows data. To overcome this drawback, Lane and Milesi-Ferretti (2001, 2007) have developed alternative estimates that cover countries and time periods for which stock data are not available. Their methodology allows us to generate stock position estimates using capital flows data and calculations for capital gain and losses. As a result, the Lane and Milesi-Ferretti dataset covers 145 countries for 1970-2011¹⁸.

¹⁸ As of September 2018.

To summarize, the traditional approach to measuring financial integration, as one of the dimensions of globalization, is to use *de jure* measures, which relate to the legal restrictions imposed on cross border capital movements. However, the numerous limitations of this approach, mentioned in Section 1.3.2.1, have increased the popularity of *de facto* measures of financial integration. The quantity-based measures are found to be the most suitable for the research topic of this paper. The possibility to determine the composition of capital flows and foreign stock, make them particularly attractive for in-depth analysis of financial integration effects.

1.4. Poverty concepts

Similarly to financial integration, different definitions of poverty require different sets of measures to be used. Hence, this section describes the available definitions of poverty.

While poverty is acknowledged to be a main concern and its reduction is a priority for policy makers in developing countries, there is no universal definition of this phenomenon due to its complex nature. There are two definitions of poverty in the literature: subsistence definition and deprivation definition (Ringen, 1988). Subsistence definition views poverty as the lack of resources needed to achieve a certain minimum level of consumption. The deprivation definition, as provided by Smith (1776), describes poverty as a lack of necessities that “the custom of the country renders it indecent for creditable people, even of the lowest order, to be without” (book 5, ch. 2.148). Subsistence definition focuses on the means of achieving a certain set of necessities, while deprivation definition concentrates on the necessities themselves.

Both subsistence and deprivation definitions capture two main characteristics of poverty: multidimensionality and relativity. Poverty is a multidimensional phenomenon as the resources and necessities referred to can come from different aspects of life (such as material, social, cultural, and political). Furthermore, poverty is a relative concept as there is a standard benchmark (such as “custom of the country”) used to set a threshold (such as a “minimum level of consumption”), below which an individual is perceived to be poor.

There are numerous approaches that aim to identify poverty. Each of them must deal with a fundamental issue: the space over which deprivation or poverty is defined (Ruggeri Landerchi et al., 2003). In other words, the definition of poverty must deal with one or more dimensions of life. A particular aspect requires the use of appropriate indicators, for example, the material dimension can potentially be captured by income. Though in this research, I will use an income-based proxy for poverty, a brief discussion of various approaches, which differ in defining the space, is presented in the following sections.

1.4.1. Unidimensional perspective

It is agreed that poverty has a multidimensional nature. However, mainly for the sake of simplicity, the monetary approach has been developed to provide a unidimensional proxy for this plural phenomenon (Bellido et al., 1998). This approach relies on the subsistence definition of poverty as it deals with the financial resources, which can be used to produce or acquire things of intrinsic value. The monetary approach is based on the assumption that the monetary metrics capture the nature of deprivation or at least proxy for all other deprivations (Ruggeri Landechi et al., 2003). It defines poverty as a shortfall from some monetary poverty line.

The works of Booth and Rowntree in the late 19th and early 20th centuries are perceived as pioneering the monetary approach and provide the approach's characteristics that are still relevant today (Ruggeri Landechi, 2000). Firstly, both researchers stressed the importance of using a scientific method in studying poverty, rather than relying on perceptions of individuals. Secondly, they adopted an individualistic view and define poverty as an outcome of individual circumstances, rather than emphasising the social processes within which the individual functions. It can therefore be measured at the level of the individual. Thirdly, poverty is objective and therefore can be externally assessed (e.g. by the scientist rather than by the poor themselves). In sum, the monetary approach is characterised by three important elements: objectivity, individuality, and externality.

1.4.2. Multidimensional perspective

Following the criticism that the monetary approach captures only one dimension of poverty, the multidimensional approach has been developed to overcome this drawback. While the monetary approach concentrates only on financial resources, the multidimensional approach takes one step further and acknowledges the importance of other resources. Moreover, while the unidimensional approach is focused on the means of fulfilling basic human needs, multidimensional approach concentrates on actual achievements in some fundamental dimensions of human well-being.

This section is devoted to three approaches that allow researchers to consider different poverty dimensions: capability, social exclusion, and the subjective poverty approach. While the capability approach, pioneered by Sen in the late 1980s, is already well-grounded in the poverty literature, social exclusion is a relatively new concept which still needs to be better defined, while the subjective poverty approach is treated only as a complement to poverty assessment.

In perhaps his most influential work, Sen rejects utilitarianism as a measure of welfare. He argues that individuals' objective is not to maximize his/her utility, but rather to have

freedom to live a life one values. According to this concept, poverty occurs when an individual fails to achieve basic capabilities, that is he/she lacks “the ability to satisfy certain crucially important functionings up to certain minimally adequate levels” (Sen, 1993, p. 41). The capability approach, therefore, emphasises the importance of individual’s freedom¹⁹ to choose and achieve the most desirable outcomes, called “functionings”, which characterize one’s quality of life.

The capability approach does not neglect the importance of money income. Possessing financial resources is a starting point in the process of achieving desirable outcomes. However, during this process there are many other factors that determine whether the outcomes are actually achieved. These factors include social income, which provides public goods and services (e.g., free public education, healthcare), individual characteristics (e.g., age, gender, health), and environmental characteristics (e.g., geographical area). All these factors combine to produce capability, the alternative combinations of functionings that are feasible for an individual to achieve.

The term “social exclusion” was first mentioned in 1965 in a moralistic book written by a French social commentator, Jean Klanfer, and it referred to people who cannot benefit from economic progress due to their irresponsible behaviour (Beland, 2007). The shift from Klanfer’s emphasis on personal responsibility to social and economic conditions was pioneered by another French thinker, Rene Lenoir (1974), who viewed exclusion as a separation of citizens from mainstream society caused by factors like disability and mental illness. Under this approach, the exclusion relates to employment-based social security systems and a society is obliged to provide its citizens with means to a livelihood (Haan, 1998; Silver and Miller, 2003).

A slightly different definition was developed by Townsend (1979), who is perceived to be a pioneer of the British social exclusion concept. He stated that people are in poverty when “their resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs, and activities” (Townsend, 1979, p.31). According to this approach, insufficient

¹⁹ In his later book published in 1999, *Development as Freedom*, Sen treats individual’s freedom as a building block of development, with expansion of freedom being both (1) the primary end (i.e. constitutive role of freedom) and (2) the principal means (i.e. instrumental role of freedom) of development. The constitutive role of freedom views development as the process of expanding substantive freedom, which enrich human life, such as: avoiding starvation and premature mortality, being literate, enjoying political participation and uncensored speech. Hence, poverty alleviation is captured by the constitutive role of freedom. The instrumental role of freedom refers to how different rights, opportunities and entitlement promotes the expansion of human freedom. Sen distinguishes five types of instrumental freedoms that “tend to contribute to the general capability of individual to live more freely”: political freedoms, economic facilities, social opportunities, transparency guarantees, protective security.

income or insufficient access to basic needs may prevent people from performing their social responsibilities.

The concept of social exclusion was introduced to the European Union mainly thanks to Jacques Delors, a president of the European Commission in the mid 1980's, who stressed on the importance of social dimension of European integration. The European Council's definition of social exclusion leans towards the British concept of social exclusion. It states that social exclusion refers to "persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State in which they live" (EEC, 1985, p. 24).

Similarly to the capability approach, the social exclusion approach acknowledges that financial indicators are insufficient as proxies for general hardship and it is necessary to use multidimensional indicators which directly reveal different aspects of disadvantage (Room, 1999). The social exclusion concept also remarks that deprivation is caused not only by lack of personal resources but also by lack of resources within the local community (Room, 1999).

However, unlike both the monetary and capability approach, the social exclusion concept concentrates mainly on the social perspective, identifying individuals unable to participate in society due to limited or lack of resources (Nolan and Whelan, 2010). In other words, it focuses primarily on relational issues, such as inadequate social participation, lack of social integration and lack of power (Room, 1999). As a result, it is suitable to use the social exclusion approach in industrialized countries which, unlike most developing countries, have comprehensive welfare provisions (Ruggeri Laderchi et al., 2003).

As a reaction to the empirical difficulties associated with the above approaches, the subjective poverty approach, growing out of participatory methods, emerged aiming to take into account the views of poor people themselves, rejecting the externally imposed estimates, characteristic for the previous approaches (Ruggeri Laderchi et al., 2003). Central to this approach is the individual's perception of reality, which requires poverty analysts to ask subjective questions about interviewees' experiences and views. Participatory methods allow for the exploration of contextual factors, accounting for local knowledge about life circumstances and ways of dealing with them (Baker-Collins, 2005).

1.5. Poverty measures

As explained in the previous section, there is no universal approach to defining poverty. The existence of multiple approaches, which have different implications, requires the use

of different poverty measures. The description of available poverty indicators is presented in this section.

1.5.1. Monetary approach

Researchers adopting a monetary approach to poverty measurement face the challenge of selecting the indicator which is the most appropriate proxy of welfare. None of the existing indicators is perfect and therefore, researchers have to carefully consider available possibilities and select the one that suits his/her area of study the best. Discussion on three common monetary indicators (disposable income, wealth, and consumption expenditure) is presented below.

Disposable income of an individual has been considered to be a good proxy for welfare, and income insufficiency has been successful in guiding policy actions against poverty (Brandolini et al., 2010). To illustrate its importance, it is worth mentioning the Millennium Development Goals (MDGs) of the United Nations, the first of which was to reduce income poverty²⁰. Eradication of extreme poverty also became the first goal among the 17 Sustainable Development Goals (SDG) adopted by the UN in 2015. From a theoretical point of view, income can be linked to the utility maximization assumption. Individuals with higher income can buy more material goods and services, achieving what they desire. As a result, higher income yields higher utility (Frey and Stutzer, 2002), making income a potential proxy for utility.

As mentioned in Section 1.4.1, monetary approach relies on the subsistence definition of poverty. Hence, income is viewed as a means of achieving a desirable consumption level and an individual is perceived to be poor when he/she has insufficient income to obtain a certain minimum consumption level. There is no universal approach to defining a minimum consumption level, but it is a common procedure to account for a basic food basket stipulated according to some nutritional standards.

Despite its popularity, income is far from being a perfect proxy for welfare. It is criticized for failing to capture the full amount of available resources, as well as longer-term resource accumulation and erosion (Brandolini et al., 2010; Dewilde, 2008). In everyday life, individuals can rely not only on disposable income, but also on financial assets to have a decent living standard. This is also true when unexpected events take place. When there is a sudden income drop, it may take a long time for individuals to experience a living standards' decline, which are measured by housing quality or possession of durables. Similarly, the income increase does not necessarily immediately improve living

²⁰ The first MDG was to halve the global percentage of population living in extreme poverty (living on less than \$1 a day) in the period 1990-2015.

standards of those in long-time deprivation as they may have to repay their debts. Moreover, increasing quality of life, by for example acquiring a bigger house, requires a large fund, which takes time to accumulate.

The second drawback of income is its instability. As income can fluctuate and vary significantly on a yearly basis, it cannot be a good indicator of such a stable phenomenon as poverty (Bellido et al., 1998).

The third argument against income, which is also true for wealth and expenditure, relates to its failure to capture multiple dimensions of well-being as it captures only the means of achieving well-being and not the end in itself (Brandolini et al., 2010). It has been empirically argued that monetary poverty does not capture all dimensions of deprivation. While the link between income and health is widely evidenced in the literature, including the iconic Preston curve²¹, the link between income and other dimensions are not that evident. For example, Ruggeri-Laderchi (1997) studies the relationship between income and basic functionings indicators (child nutrition, morbidity, and secondary school enrolment) in Chile. She reports that income per capita appears to be an insignificant determinant of these indicators, which suggests that income does not provide a real picture of poverty.

When considering the first income shortcoming, the failure to capture all available resources, it is advisable to use an alternative monetary indicator – wealth, defined as assets minus liabilities. This indicator can play an insurance role when income declines or when economic shocks occur (e.g. unemployment). The ability to decrease accumulated wealth²², being tangible or intangible assets, or to borrow helps to smooth out consumption (Brandolini et al., 2010). Therefore, wealth can be a better monetary indicator of welfare than income. Unfortunately, the drawback of using this indicator is the very limited data on assets and liabilities of individuals in developing countries. Moreover, assets are a stock of both tangible (financial and physical) and intangible resources (e.g., network access, human capital), which makes it problematic to measure

²¹ Preston (1975) shows that there is a non-linear relationship between income per capita and life expectancy. At the lower end of GDP distribution life expectancy experiences a steep increase, which slows down and reaches eventual plateau at the upper end of GDP distribution. Preston (1975) also emphasises on the importance of factors exogenous to income, such as imported health technologies, in reducing mortality rate.

²² One may raise a question whether income-poverty is compatible with asset accumulation. Conventional thinking is that low-income households cannot accumulate assets as all their income is used to fulfil their consumption needs. Interestingly, McKernan et al. (2010), using data on twelve developed countries provided by the Luxembourg Wealth Study, prove that low-income households are able to accumulate assets. They find that poor families in the US hold their wealth mainly in the form of bank accounts and automobile. However, it must be noted that McKernan et al.'s (2010) study is limited to developed countries, where multiple assets building programmes, such as income tax exemption and special personal saving accounts, are widely available to low-income families.

wealth. Therefore, wealth studies usually have to exclude intangible assets in their analysis (McKernan et al., 2010).

To overcome the second income drawback related to the lack of stability, one can use consumption expenditure as expenditures can be smoothed over time. However, although expenditure is a stable variable, its pattern is too dependent on individuals' stage of life cycle, preferences, habits, and geographical location (Bellido et al., 1998). Moreover, the availability of public goods and services may increase welfare without rising expenditure, which is also true for income. As a result, lower expenditure does not necessarily go together with lower welfare, which does not make it a better proxy for poverty than income. Finally, similarly to wealth, there is limited data on consumption expenditure.

The last possible disadvantage of income leads to the use of multidimensional poverty indicators. However, these measures may be even more problematic than income, mainly because of the difficulty in defining and weighting the various possible dimensions of poverty. More details on multidimensional indicators is given in the subsequent sections.

Despite the abovementioned drawbacks, income is still the best monetary indicator for the purpose of this study. This statement is based on the argument that it is more likely that financial integration, and subsequently economic growth, affects income in the short run. Wealth and consumption expenditure are possibly impacted in the longer run, which requires collection of data spread over multiple consecutive years. It is also not meaningless that income data are more easily available for developing countries than wealth and expenditure, which extends the possibilities for empirical research.

1.5.2. Capability approach

Although the most famous multidimension approach, the capability approach, introduces a clear, logical and complex definition of poverty, it is considered to be underspecified as it can be applied in practice in too many different ways. Robeyns (2006) identifies three theoretical specifications that need to be accounted for when using CA: choosing between capabilities and functionings, selecting relevant capabilities, and weighting different capabilities.

Empirical researchers need to decide whether to focus on capabilities (potential outcomes) or functionings (desirable outcomes). The definition of poverty provided by Sen (1993) (see Section 1.4.2) clearly indicates that one should focus on capabilities and not impose a particular conception of the good life. However, there is a difficulty, or even impossibility, in measuring capabilities (Ruggeri Laderchi et al., 2003). The

currently available datasets do not provide information that would allow one to construct people's capability sets (Robeyns, 2006). As a result, empirical researchers can only assess poverty by observing the actual functionings (Thorbecke, 2005)²³.

The second specification relates to the selection of relevant capabilities. Sen has never provided a fixed list of capabilities and refuses to do so, arguing that capability assessment is context-specific. He advocates that capabilities should be selected based on the specific research purpose, social conditions, public reasoning and democratic discussion (Sen, 2004). Sen's decision has been recognized as showing a respect for the agency of CA practitioners (Alkire, 2005). However, it is unclear how public reasoning and democratic discussion should be conducted to provide a good population representation (Robeyns, 2005). Martha Nussbaum, who develops CA from a different perspective, focusing on the guaranteed political principles that should be provided by government to its citizens, stresses the importance of developing one definable list of capabilities. Nussbaum (2003) provides an open-ended list, called "the central human capabilities", which is composed of 10 categories²⁴. The list is formulated at an abstract level and is subject to frequent revisions. Although it is sometimes considered as a useful guide, it has been criticised for being generated through an undemocratic process (Robeyns, 2003). From the CA perspective, it is important that people are heard and can be involved in decision-making processes, including the process of selecting relevant capabilities. Furthermore, Nussbaum's list may appear to be useful only when researching on minimal rights against deprivation (Sen, 2004). Therefore, empirical researchers with different practical purposes should find their own way of selecting appropriate sets of capabilities²⁵. They should also take into account that capability sets vary over time, which is caused by cultural, economic, political, sociological, and technological changes (Gaertner, 1993).

The last theoretical specification is weighting the different capabilities for an overall assessment. In practice, researchers usually use two methods of weighting: weighting of different variables into one functioning, and weighting of different functionings into an individual well-being indicator (Robeyns, 2006). The former method has been applied in constructing the well-known Human Development Index (HDI), where the functioning of educational achievement is calculated from literacy (weight of two-thirds) and school

²³ A more detailed discussion on choosing between capabilities and functionings can be found in Robeyns (2006).

²⁴ The categories are the following: life; bodily health; bodily integrity; senses, imagination, and thought; emotions; practical reason; affiliation; other species; play; control over one's environment.

²⁵ One can apply, for example, the five criteria for the selection of capabilities developed by Robeyns (2003): explicit formulation; methodological justification; sensitivity to context; different levels of generality; exhaustion; and non-reduction.

enrolment (weight of one-third) variables²⁶. This weighting practice has been criticised for being arbitrary. The second method is based on measuring functionings in a statistical way and determining weights depending on the variance of indicators. Although this method eliminates the problem of arbitrariness, the validity and plausibility of its underlying assumptions are still questioned (Robeyns, 2006).

The most popular operational tool, which embeds the core CA ideas, is the aforementioned Human Development Index (HDI) launched in the first Human Development Report in 1990 by the UNDP (UNDP, 2018). It is a weighted sum of three components (functionings): health, education and income. Although this index has successfully brought attention to two non-income dimensions of development, it has been criticised for its weak conceptual foundations (Kanbur, 2002). As explained by Sen (2004), HDI is based on a minimal listing of capabilities, which can be calculated from available statistics, as it focuses only on getting a minimally basic quality of life. The aim of creating HDI was to cover universal capabilities that would allow for cross-country comparisons. There is also a serious issue of weighting particular dimensions in this measure. By applying equal weightings to its components, HDI satisfies the neutrality condition (Gaertner, 1993). However, such practice also lacks a solid conceptual ground (Kanbur, 2005).

Over the years, UNDP has developed additional indices to capture other dimensions of human development. In particular, the Human Poverty Index (HPI) was introduced in 1997 to monitor poverty more closely. Although it measured deprivations in key human development dimensions (i.e. illiteracy and lack of access to clean water), it could not provide a detailed picture of poverty as it combined average deprivation levels (OPHI, 2018). As a result, the new Multidimensional Poverty Index (MPI), which supplants HPI, was created by UNDP and Oxford Poverty & Human Development Initiative (OPHI) in 2010. It uses microeconomic data and the Alkire-Foster (AF)²⁷ method to identify the poor.

²⁶ From 2011 onwards, the educational achievement is calculated using mean years of schooling for adults aged 25 years and expected years of schooling for children of school entering age (UNDP, 2011). Educational achievement is the geometric mean of the two indices.

²⁷ This method counts deprivations that a person experiences in 10 indicators, which are categorized in 3 dimensions of poverty (i.e. health, education, standard of living). Four indicators capturing health and education carry the weight of 1/6, while the remaining six, which capture standard of living, have the weight of 1/18. People are identified as multidimensionally poor if their weighted deprivations sum to 1/3 or more. The details on calculation of the MPI 2018 can be found in Alkire and Jahan (2018).

1.5.3. Social exclusion

The social exclusion approach encourages the use of non-monetary deprivation indicators to analyse poverty. However, similarly to the capability approach, this approach also causes the problem of selecting appropriate deprivation dimensions and assigning weights. Currently, in European countries, material (or physical) deprivation indicators are in use. They capture the following deprivation dimensions: basic everyday necessities (e.g., food, replacement of worn-out furniture), durables (e.g., TV, car), housing (e.g., indoor flushing toilet, cold and hot water), and the local neighbourhood environment (e.g., noise, light) (Nolan and Whelan, 2010).

The concept of social exclusion was developed in industrialised countries, which raises the question of its applicability to developing countries. While the concept deals with those being outside some accepted norms, it is difficult to define “norms” in developing countries as they differ significantly from those in industrialised ones (Saith, 2001). In developed countries social exclusion may occur when one is excluded from the welfare state and/or social security schemes. However, developing countries lack a well-formed welfare state, such as provision of income support, which potentially makes application of the social exclusion concept in its original form less feasible. Moreover, social security in developing countries takes the form of specific programmes created by government to tackle arising problems, such as social assistance to relieve poverty. Social security in developing countries has a broader definition as it is provided not only by government, but also non-governmental organizations or humanitarian institutions. As a result, there is a great difficulty in applying social exclusion concept to developing countries.

1.5.4. Subjective poverty

To apply the subjective poverty approach in practice, empirical researchers usually use Participatory Poverty Assessments (PPA), which involves non-technical methods, such as visual methods (e.g., ranking exercises), focus groups, and semi-structured interviews (Baker-Collins, 2005). This method of collecting data yields relatively small sample sizes, making it difficult to conduct statistical significance tests (Ruggeri-Laderchi et al., 2003). Like other multidimensional poverty approaches, participatory methods do not attempt to provide a definitive list of poverty dimensions for empirical consideration.

The largest participatory research initiative, called Voices of the Poor, was carried out by the World Bank at the turn of the new millennium. The initiative, under the leadership of Deepa Narayan, resulted in the collection of 60,000 voices of the poor from 60 countries, and the publication of three books: *Can anyone Hear Us?* (2000a), *Crying Out for Change* (2000b), and *From Many Lands* (2002). The analysis of data, gathered through discussion groups and open-ended interviews, confirmed that the poor perceives poverty

as a multidimensional phenomenon. Additionally, the World Bank's regional fieldworkers experienced numerous obstacles when collecting the data. For example, it was often difficult to set up meetings with villagers due to their long working hours and engagement in activities that supplemented their incomes. Other examples include the difficulty in establishing trust with participants, as well as lack of involvement in group discussions (Narayan et al., 2000b). All these factors affected the quality of the surveys.

Subjective poverty in Europe is additionally captured in surveys carried out by the European Bank for Reconstruction and Development (EBRD), in collaboration with the World Bank, as well as European Social Survey (ESS). The EBRD's survey, called Life in Transition Survey (LiTS), has been conducted in 2006, 2010, and 2016 in mainly transition countries in Central and Eastern Europe. To capture one's perception of his/her wellbeing, it asks respondents to place themselves in the scale from 1 to 10, where 1 is the poorest 10% in the country (EBRD, 2018). The ESS has been conducted in Europe every two years since 2001 and asks respondents to rate their health, neighbourhood safety, and social involvement (ESS, 2018).

1.5.5. Adopted poverty measure in this thesis

Having provided the extended description of existing poverty concepts, it is important to select the most appropriate one for the purpose of this study. As the objective of this research is to determine the relationship between financial integration and poverty in developing countries, the concepts are assessed according to the following categories: measurement feasibility, applicability to developing countries, and fitness to the FI-poverty context.

It is agreed that poverty is a multidimensional phenomenon and therefore it is logical to use multidimensional approach in the empirical analysis. However, the problem of measurement arises. As mentioned in Section 1.5.2, the capability approach imposes the challenge of selecting relevant capabilities, which is also true for social exclusion and participatory methods. This is particularly difficult for cross-country analysis as capabilities are context-specific, making selecting a universal capability set almost impossible. It is also challenging to build a capability set, especially for developing countries, due to lack of appropriate data. Furthermore, the process of aggregation involves applying an artificial weighting scheme.

Regarding applicability to developing countries, it is clear that social exclusion should not be selected due to the lack of comparable welfare and social support structures and the extended definition of social security in these countries (see Section 1.5.3). The remaining approaches have been applied to developing countries in the literature.

However, subjective poverty has not been widely used in cross-country analysis due to the descriptive nature of the data and limited sample sizes (see Section 1.5.4). For example, Baker-Collins (2005) conducts PPA only among members of a food co-operative in Niagara Falls, Canada. The only exception are the World Bank's Voices of the Poor reports, however, the quality of data might be jeopardized due to numerous obstacles faced by fieldworkers (see Section 1.5.4). Comparison between countries is also limited when using the capability approach due to its context-specific nature.

Finally, it is necessary to analyse approaches to poverty from the perspective of the possible FI-poverty relationship. It is clear that financial integration, defined as a free movement of capital across borders (see Section 1.2), deals with the financial aspect of life, which relates to the monetary dimension of poverty. The links between FI and other poverty dimensions, such as education or health, are rather unclear or very indirect, making it difficult to use multidimensional approach in the FI-poverty analysis.

Overall, the monetary approach seems to be the most suitable for the purpose of this thesis. The availability of income data, as well as its universality, makes using the approach feasible for developing countries and a cross-country analysis. Furthermore, the nature of financial integration, being a movement of capital, suggests that it should be linked to the financial dimension of poverty. The effects of financial integration, discussed in more detail in Section 1.8, such as new jobs creation, economic growth and financial crises, should affect individuals' financial resources in the first place.

In the empirical chapter (chapter 2), both poverty rate or poverty incidence and the depth of poverty will be analysed, to be able to comment on the general poverty alleviation property of financial integration, but also on its ability to reach all poor (as a reduction in poverty incidence associated with an increase in poverty depth could indicate that FI creates exclusion).

1.6. Entrepreneurship concepts and measurement

1.6.1. Definition of entrepreneurship

The term "entrepreneur" first appeared in Cantillon's masterpiece on economics entitled "An Essay on Economic Theory"²⁸ in 1755. This Irish-French economist viewed entrepreneurs as risk bearers, middlemen or arbitrageurs, who buy goods/services from workers at a certain price before knowing the price that consumers are willing to pay. Hence, entrepreneurs facilitate production and exchange, bringing supply and demand sides together to achieve market equilibrium. The Cantillon's thoughts were further

²⁸ The original title was "Essai sur la Nature du Commerce en Général"

developed by Knight (1921) whose key contribution was to highlight how risk-adjusted returns dictated one's decision to become an entrepreneur. In his view, an individual decides to become an entrepreneur when risk-adjusted returns are favourable. Otherwise, he/she chooses paid employment.

A different perception of entrepreneurs was presented by Schumpeter (1935). He considered them to be innovators who introduce new products or new production processes. In his view, entrepreneurs do not bring market to the previously set equilibrium, opposite to Cantillon and Knight's school of thought, but they bring "creative destruction" and new combinations. Hence, entrepreneurs do not appear in non-equilibrium situation to act as arbitrageurs, but they in fact disturb an existing equilibrium situation. Schumpeter regarded entrepreneurship as a temporary process which ceases until the next wave of innovation emerges.

The Schumpeter's ideas were widely criticised by Kirzner (1973) and other Austrian's leading economists (e.g. von Mises, Hayek). Kirzner (1973) agreed with Cantillon and Knight in perceiving entrepreneurs as arbitrageurs who bring back market equilibrium. He also emphasized the importance of entrepreneurs' alertness to opportunities that are in principle available to everyone in non-equilibrium market. While Schumpeter only considered innovators to be entrepreneurs, Kirzner (1973) argued that "entrepreneurship is manifested in short-run movements as much as in long-run developmental changes, and is exercised by imitators (who move to exploit the opportunities exposed by the activities of the innovators) fully as much as by the innovators themselves" (p. 81).

Another popular definition of entrepreneurship is provided by Shane and Venkataraman (2000). They define the field of entrepreneurship as "the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited" (p. 218). Consequently, entrepreneurs are individuals who discover, evaluate, and exploit opportunities. As noted by Langlois (2007), Shane and Venkataraman three aspects of entrepreneurship can represent the earlier definitions. In essence, Kirzner's alertness to new opportunities is about *discovery*, Knight's analysis of risk-adjusted returns is about *evaluation*, and Schumpeter's carrying out of new combinations is about *exploitation*. The Shane and Venkataraman's framework, later recast as Discovery Theory, views opportunity to be objective, pre-existing, and actor-independent. The contrasting framework (i.e. the Creation Theory) developed by Alvarez and Barney (2007, 2010) perceive opportunities to be socially constructed by the agent and to be dependent on agent's perception.

Apart from the importance of opportunities, another concept central to entrepreneurship is new venture creation. In fact, some researchers equate entrepreneurship with a

creation of new business (e.g. Low & MacMillan, 1988, Gartner, 1988), associating entrepreneurship with an activity. Such practice has been criticised for ignoring the variation in the quality of opportunities that different people identify, leading researchers to neglect to measure opportunities (Shane and Venkataraman, 2000). Bygrave and Hofer (1992), who view entrepreneur as an individual who “perceives an opportunity and creates an organization to pursue it” (p. 14), seem to merge the two concepts in their definition. They perceive entrepreneurs to be individuals who have discovered and evaluated opportunities, either available to everyone (Kirzner’s approach) or created by themselves (Schumpeter’s approach), and are in the process of exploitation through new firm creation.

Despite the widespread acceptance of the notion of “opportunity” in defining entrepreneurship, this concept has been recently criticized. Davidsson (2016), for instance, points out that “opportunity” comes with connotation of favourability, leading to a conceptual overlap with entrepreneurial outcomes. To assure conceptual clarity, he proposes to replace the “opportunity” notion with three separate concepts: external enablers (i.e. “a distinct external circumstance which has the potential of playing an essential role in eliciting and/or enabling a variety of entrepreneurial endeavours by several (potential) agents”, p. 237), new venture ideas (i.e. “imaginary combinations of product/service offerings, potential markets or users, and means of bringing these offerings into existence”(p. 239)), and individuals’ opportunity confidence (i.e. “an individual evaluation (...) of a stimulus as a basis for the creation of new economic activity”(p. 240)).

1.6.2. Entrepreneurship measures

Entrepreneurship is still a relatively young field of empirical research, but it has grown with an impressive rate in the recent decades (Short et al., 2010). The growing interest in entrepreneurship has called for an emergence of high quality data that is comparable across countries. This section presents the most popular measures.

The majority of cross-country measures track the emergence of entrepreneurs using public registries or surveys. Following Parker (2018), they can be divided based on the unit of measurement, namely: new venture creation and nascent entrepreneurs, Small and Medium-sized Enterprises (SMEs), self-employment²⁹.

²⁹ Parker (2018) also mentions two other measures of entrepreneurship used in the literature: frequency of self-made billionaires (proposed by Henrekson and Sanandaji, 2013), and habitual entrepreneurs. The first measure has been criticised for inadequately capturing entrepreneurship as it focuses a small fraction of the most successful entrepreneurs and hence, is not considered in this thesis. Habitual entrepreneurs group captures those having two or more businesses either at the same time (i. e. portfolio entrepreneurs) or one after closing another (i. e. serial

Among the datasets associating entrepreneurship with the creation of new ventures, the World Bank's Entrepreneurship Database offers one of the best country and time coverage³⁰. As an attempt to ensure cross-country comparability, this database tries to apply the same concept of entrepreneurship and unit of measurement (i.e. number of newly registered companies with limited liability) across participating economies (World Bank, 2017b). Such attempt is unsuccessful due to the differences in data collection practices of the national public registries (see next paragraph for details). Other popular dataset associating entrepreneurship with new venture creation is provided by the OECD-Eurostat Entrepreneurship Indicators Programme in their annual Entrepreneurship at a Glance reports³¹. Both the World Bank and OECD source their data from national business registries.

One of the drawbacks of using the World Bank and OECD data is the lack of comparability across countries. Although both organizations claim that their employment of the consistent entrepreneurship definition, unit of measurement, and sources of information across countries solves the comparability issue, the national public registries used in their datasets differ from each other in terms of registration practices (Acs et al., 2014). For example, Sweden's data refer to the total economy, while Norway's or Netherland's data exclude agriculture (see OECD, 2017a, for the list of national sources and their registration practices). Similarly, sole proprietors are included in some countries (e.g. Denmark), and excluded in other (e.g. Spain). Besides the different registration practices, most national registries do not distinguish de novo firms from other types of new entries, such as take overs or reorganization of existing businesses (Acs et al., 2014). Only Germany seems to exclude transformation, take-over and change in ownership (OECD, 2017a).

The datasets discussed so far focus only on the formal sector due to the nature of primary data sources and the resulting difficulty in quantifying the size of informal sector (World Bank, 2017b). This issue is particularly relevant in developing countries where the number of unregistered firm entries has been found to be much higher than number of registered firms (Acs et al., 2014). Acs et al. (2008) suggest that this occurrence is caused by two groups of factors: institutional and environmental conditions for entrepreneurs. In terms of institutional environment, they have found that legal and judicial inefficiency leads to lower registration of new firms. Regarding environmental

entrepreneurs). As this group represents only a sub-set of entrepreneurial class, it is also not accounted for in this thesis.

³⁰ At the time of writing, the data is available for 136 countries in the period 2004-2014.

³¹ The reports contain data for 35 countries (30 OECD members, and 5 non-OECD members) and have been published since 2011

conditions, they argue that many developing countries have a substantial informal sector and, as a result, entrepreneurs do not have to formalize their firms to start to operate.

A completely different data collection approach is used by the Global Monitoring Entrepreneurship (GEM), which addresses the issues mentioned above. The GEM research programme was initiated in 1997 and aims to collect cross-national harmonized data on entrepreneurial activity through surveys, called Adult Population Surveys, of at least 2000 randomly selected individuals within a country³² (Reynolds et al., 2005). It defines entrepreneurs as “adults in the process of setting up a business they will (partly) own and/or currently owning and managing an operating young business” (Reynold et al., 2005, p. 209). The individuals involved in the process of creating a new business, which have paid wages or salaries for less than 3 months, are called nascent entrepreneurs, while young businesses have paid salaries and wages for more than 3 months but less than 42 months (Herrington et al., 2010).

Unlike the World Bank and OECD, the GEM’s application of the same survey across countries ensures cross-national comparability. Furthermore, by collecting information directly from individuals instead of national registries, the GEM data captures all types of economic activity in both formal and informal sectors, showing a more accurate level of entrepreneurial activities in participating countries (Acs et al., 2008). However, the GEM’s main entrepreneurial activity indicator, Total Entrepreneurial Activity, which consists of nascent and young businesses, has been criticised for unnecessarily capturing hobby businesses that generate little private or social value (Parker, 2018). Additionally, the determination of entrepreneurship based on businesses’ age might lead to underestimation of the entrepreneurial activities as dynamic and enterprising firms older than 42 months should still be classified as entrepreneurial (Parker, 2018).

The employment of different data collection approaches has resulted in substantial differences in data provided by GEM and other sources. Acs et al. (2008), for example, find that GEM reports higher level of early stage entrepreneurship than the World Bank business entry data in developing countries and the opposite was true in developed countries. While GEM data capture all types of economic activity and potential supply of entrepreneurs, the World Bank and OECD data represent the actual rate of registered entrepreneurial activities only.

The number (or share of) SMEs in the economy is another, more established, measure of entrepreneurship. Existing firms are classified into SMEs category based on their size,

³² At the time of writing, the country level indicators are publicly available for the period 1999-2015, with the number of participating countries ranging from 10 in 1999 to 70 in 2013 and 2014. The individual-level data is publicly available for the period 1999-2013.

measured by the number of employees, turnover or other balance sheet indicators (Parker, 2018). While the availability of SMEs data is widely available from national statistical agencies, this measure has been criticized for failing to capture entrepreneurship. This is caused by the fact that (1) firm size definitions are arbitrary and industry-specific, and (2) SMEs includes part-time and hobby businesses (Parker, 2018). Furthermore, it does not account for the informal sector., which can be substantial in developing countries.

Another commonly used output measure of entrepreneurship is self-employment, i. e. individuals who own and work in their own business, earning irregular income by exercising their profession or business at their own risk (OECD, 2017b; Parker, 2018). The popularity of this measure lies with its widespread availability. In fact, self-employment is captured in national household surveys and its country-level aggregation can be accessed via, for example, OECD Labour Force Statistics³³. Despite its practical aspect, the use of self-employment data causes problems related to (1) classification difficulties in sample surveys, and (2) inability to capture genuine entrepreneurship due to the measure's broadness (Parker, 2018). Regarding the classification issue, in many countries self-employed are categorized as employees for tax purposes, while in some other countries household survey respondents can self-assess their employment status. Furthermore, self-employment does not capture the process of venture creation, an integral part of entrepreneurship, and contains individuals belonging to a "grey category", such as family workers, employees on self-employment contract or franchisees (Parker, 2018). Regarding the broadness of self-employment measure, it captures a very diverse group of individuals, from small business owners to independent professionals (e.g. doctors, lawyers) and construction workers. Hence, according to Guiso et al. (2005), self-employment does not measure "pure" entrepreneurship, unless some professions are excluded from this measure (e.g. tradesmen).

To summarize, the existing cross-country measures give an opportunity to analyse different aspects of entrepreneurship. The business registry data tracks formal new entries, the successful entrepreneurs who made it through the start-up process, which might be more relevant for policy makers. The survey data, on the other hand is better at standardizing the data across countries and is better at capturing all type of entrepreneurial entries.

³³ OECD Labour Force Statistics database provides self-employment data from 1955 for United States and Japan. At the time of writing, the data is available for 34 countries for 2016.

1.7. Financial inclusion concept and measurement

1.7.1. Financial inclusion definition

Financial inclusion is the youngest concept considered in this thesis. It emerged in the 2000s, when a group of World Bank researchers, led by Thorsten Beck and Asli Demirguc-Kunt, recognized the importance of separating the idea of financial inclusion from financial development (i.e. the depth of financial sector), which had been a well-established research area in the economics and finance literature. While financial depth might be high due to the increased availability of capital, the financial inclusion might still be low if a large amount is assigned to a small number of households and firms (Anzoategui et al., 2014). In Beck and Demirguc-Kunt (2008)'s view, financial inclusion means “the extent to which households and firms can access and use formal financial services” (p. 383). While other researchers widely agree with this definition, some express the opinion that financial inclusion should be about the inclusion of poor households and small firms (e.g. Sarma and Pais, 2011).

A clear distinction must be made between access and usage as the lack of usage does not imply a lack of access (Beck and Demirguc-Kunt, 2008; Ardic et al., 2011). In fact, many individuals and firms can choose freely not to access formal financial services due to cultural or religious beliefs, or simply a lack of demand for such services. Hence, financial inclusion must cover both access to and usage of formal financial services.

1.7.2. Financial inclusion measures

Financial inclusion starts with a possession of formal deposit account, which can be used to save money and make/receive payments. It also encompasses access to credit from formal financial institutions (Demirguc-Kunt et al., 2017). The earliest data on financial integration was country-specific, obtained by researchers collecting data from individuals/households or financial institutions in a particular country. Although it provided a useful initial picture of financial integration, this data cannot be used in a cross-country analysis due to (1) different definitions of an account in the surveys, (2) different unit of measurements (financial institutions, households, and adults with different age cut offs: 15, 16, 18 years), and (3) lack of regular and recent data updates (Demirguc-Kunt et al., 2017).

The more recent cross-country databases, which overcome the above obstacles, can be classified according to their data collection approach: demand-side approach, and supply-side approach. As the aim of this thesis is to conduct cross-country analysis, the

following sub-sections focus on the description of such new cross-country databases only.

1.7.2.1. Demand-side measures

The demand-side measures aim to capture financial integration from the perspective of potential private users of the formal financial sector: individuals, households and firms. The main advantage of this measurement approach is a possibility to capture users' characteristics and non-price barriers that could affect their usage of financial services (such as gender, cultural/religious beliefs, firms size etc.). However, collecting user-side data is a costly and time-consuming process, which make it difficult to obtain data from a large number of countries on a regular basis. Hence, there is a limited number of available datasets, which are not free from shortcomings. They are described below.

There are three cross-country user-side databases cited in the literature: FinMark Trust's FinScope, European Bank for Reconstruction and Development's (EBRD) Life in Transition Survey (LITS), and World Bank's Global Findex. The first of them, under FinScope Consumer programme started in early 2000s, conducts individual-level surveys among adults (over 16 years old) to determine, *inter alia*, their engagement with the financial services sector (both formal and informal) and their attitudes and perception regarding financial products and services. It covers only over 30 countries, including Southern African Development Community members, some West African and South Asian countries (FinMark Trust, 2018a). Apart from the limited country coverage, it also does not provide a regular update on most of them. For example, there are four irregular waves of the Namibia Financial Inclusion Survey conducted in: 2004, 2007, 2011, 2017 (Namibia Statistics Agency, 2017).

FinMark also runs FinScope Micro, Small and Medium Enterprises (MSME) programme, which conducts surveys among adult business owners (18 years or older) to explore the role of financial sector in MSMEs development. This relatively young programme, which started in 2010 with the first survey in South Africa (FinMark Trust, 2010), covers only 8 African countries so far (FinMark Trust, 2018b).

The EBRD, in conjunction with the World Bank, has been conducting household surveys in 34 countries, known as "the life in transition surveys" (or LITS). They focus mainly on transition countries of Central and Eastern Europe. Although the surveys are not designed specifically to measure financial inclusion, they include several questions on financial decisions, such as: "Did you attempt to borrow money to set up the business?", "Whom did you borrow from?" (EBRD, 2018b). So far, these surveys have been carried out in three waves: 2006, 2010, and 2016 (EBRD, 2018a). Similarly to FinScope, LiTS

also suffers from a relatively small country coverage due to its regional focus. Furthermore, the survey waves take place in irregular time intervals.

To address previous datasets shortcomings, the World Bank has developed the Global Financial Inclusion Database (Global Findex) which collects data through adult surveys. So far, there have been three waves of the surveys in 2011, 2014, and 2017. Global Findex offers a wide individual and country coverage; for example, over 150,000 individuals in 148 were surveyed in 2011 (Demirguc-Kunt and Klapper, 2012). While Global Findex offers extensive information on individuals' background, it does not collect data on entrepreneurial firms. In fact, there are only two questions addressed to business owners: "In the past 12 months, have you, personally, saved or set aside any money to start, operate, or grow a business or farm?", and "In the past 12 months, have you, by yourself or together with someone, borrowed money to start, operate, or grow a business or farm?". Hence, the Global Findex data do not allow to analyse firm-specific determinants of financial inclusion (e.g. type or age of business).

1.7.2.2. Supply-side measures

The only available cross-country provider-side database is the IMF's Financial Access Survey (FAS). The first financial inclusion indicators (such as ATM per capita and number of loan accounts), were collected by Beck, Demirguc-Kunt and Martinez Peria from 99 country regulators in 2004 (Demirguc-Kunt and Klapper, 2012). The data was later updated and expanded by the World Bank's Consultative Group to Assist the Poor in 2008-2009, and by the IMF since 2010. The FAS, unlike the above-mentioned demand-side datasets, provide country-level data on a yearly basis from 2004 to 2015 thanks to a relatively low cost of data collection process. It also covers 189 economies, nearly all countries in the world. Its main advantage from the perspective of this thesis is, however, a clear distinction between household and SME accounts. Such separation allows to examine how differently financial integration can affect households and SMEs.

The FAS has not been free from criticism. Demirguc-Kunt and Klapper (2012), for example, has highlighted its three major disadvantages. First, the country indicators are computed based on data collected only from regulated financial institutions, which does not give a true picture of financial access. However, in our view, these indicators are good proxies for financial inclusion, which is about access and use of *formal* financial services. Hence, while households and SMEs can access finance through informal channels, the latter are not part of financial inclusion. Second, the aggregation does not provide the real number of users due to multiple or dormant accounts. Third, the FAS data does not capture financial users' characteristics, which from the policy makers

perspective, does not allow to identify the most financially excluded segments of population (e.g. the poor or women).

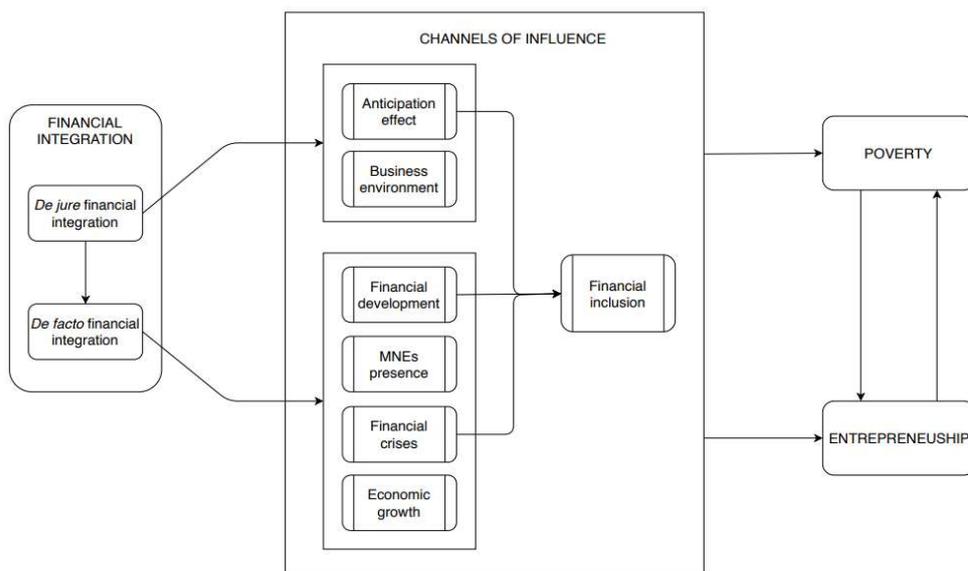
Despite the criticisms, the supply-side data offered by the FAS seem to be most appropriate for this thesis. This is dictated by the fact that such data provide a clear distinction between two types of formal financial services users, i.e. households and SMEs. Hence, these data allow to investigate how financial integration affect two vulnerable groups which are the most likely to be excluded from the financial sector. Furthermore, as other financial inclusion measures have started to emerge relatively recently, the supply-side data offers a superior country and time coverage compared to user-side data.

1.8. Theoretical framework

The aim of this thesis is to explore the impact of financial integration on poverty alleviation, entrepreneurship, and financial inclusion. This section provides a description of the potential linkages between the four concepts. A simplified graphical representation of the relationships is presented in Figure 1. As can be seen in the diagram, financial integration is decomposed into *de jure* and *de facto* dimensions, and their impacts on the other concepts are assessed separately. The common perception is that *de jure* financial integration (i.e. lifting capital controls on international flows) leads to *de facto* financial integration. However, the more recent research has shown that capital controls have little effect on international capital flows. Jinjarak et al. (2013), for example, find no evidence that increasing capital restrictions is effective in reducing capital inflows from mutual funds in Brazil. They report only weak evidence that lifting capital controls modestly prevent further decline in capital inflows. The paper concludes that capital controls' role is limited to sending a signal regarding the government's intentions and sensibilities. Thus, it is important to differentiate the potential effects of *de jure* financial integration from those of actual capital flows analysed in the previous sections.

The focus of this section is on the mechanisms through which FI affect poverty and entrepreneurship, where financial inclusion is viewed to be one of these channels of influence.

Figure 1. The linkages between financial integration, poverty, entrepreneurship, and financial inclusion.



1.8.1. Effects of *de facto* financial integration

The first effect of *de facto* FI is improved access to formal capital and financial services, leading to financial inclusion. In essence, FI can spur financial development by introducing new sources of capital, which encourages domestic financial system sophistication and depth, increasing the number of financial products and services available to residents. If such improvements lead to higher number of financial services users, financial inclusion will increase, benefiting entrepreneurs and the poor. In essence, as financial integration increases the availability of funds and reduces financial constraints, it can provide a starting capital to those willing to engage in entrepreneurial activity, including the poor, the unemployed and individuals at risk of falling into poverty, who were previously excluded from the formal financing sector. Increased financial inclusion has been shown to reduce poverty in the literature. Bruhn and Love (2014), for example, provides evidence that access to finance has a sizeable positive effect on labour market activity and income levels, especially among low-income individuals. The positive effect on the income growth of poor households is also found in India by Swamy (2014).

Furthermore, financial integration in the form of foreign bank entry can improve the efficiency of the domestic banking sector (Mishkin, 2006) by, for example, introducing foreign management practices. Such improvements of the financial sector in general, and the banking sector in particular, can lead to financial inclusion. On the other hand, due to information asymmetry foreign banks may prefer to give credit only to large companies and wealthy individuals who are able to provide “hard” information, such as

financial statements (Giannetti and Ongena, 2009), causing financial exclusion and hurting entrepreneurial firms and the poor.

The second channel of influence is the presence of Multinational Enterprises (MNEs). If a MNE decides to restructure a newly acquired domestic firm, the unskilled workers, who are often poor, are more likely to be made redundant. Furthermore, by fostering competition, MNEs may crowd out local firms, including entrepreneurial class, which are unable to catch up with the improved performance of other companies. On the other hand, they can facilitate entrepreneurial activity through vertical spillovers. For example, they can increase demand for products and services offered by domestic firms, which in turn facilitate entrepreneurial entry to accommodate for the higher demand. Such new firms can create unskilled jobs, benefiting the poor.

Another widely discussed effect of FI are financial crises. Financial integration usually raises a country's dependency on foreign capital, making it vulnerable to a sudden reversal of capital flows (Gabel, 2003). Furthermore, financially integrated economies, which, for example, are connected through international financial system, are also exposed to a possibility of contagion (i.e. financial and macroeconomic instability originated in another country) (Schmukler, 2003). It is agreed that crises are detrimental for the poor and entrepreneurs by slowing down economic activity (Gabel, 2003; Ferreira et al, 1999). While entrepreneurial firms could be hit by lower demand for their products and services, the poor can be affected by decreased labour demand.

Furthermore, the presence of de facto financial integration limits the tools policy-makers can use to avoid crises. This is caused by the fact that policy-makers in the open economy face a monetary trilemma (also called the Impossible Trinity). To be more specific, it is possible for a country to have only two items from the following desirable properties of an international monetary system: exchange rate stability, monetary policy oriented toward domestic goals, freedom of international capital movements (Krugman et al., 2015). As crises are often accompanied by currency depreciation, policy-makers have to choose between an intervention to stabilize an exchange rate and an adoption of monetary policy to pursue other targets. If they select the latter, a currency depreciation results in higher prices of imported goods. If entrepreneurial firms rely on these goods in their production chain, their marginal cost would increase, reducing profit. An increase in imported food prices would hurt the poor, especially when they are followed by a rise in domestic food prices.

The public spending cuts caused by crises also reduce the availability of social services for the poor and financial and non-financial support for entrepreneurs. Additionally, according to the bank lending supply shock theory, bank losses from toxic assets cause

a lower supply of loans to non-financial firms (Kahle and Stulz, 2013). Needless to say, a lower supply of bank credit can also affect entrepreneurial firms and the poor, who are perceived to be risky borrowers.

Finally, the last channel of influence is economic growth. Financial integration can enhance economic growth through offering more risk diversification possibilities, allowing firms to invest in riskier, but higher-yield domestic projects. Financial integration, especially in the form of increased FDI, can also improve aggregate productivity by generating technology spillovers and promoting better management practices. Moreover, as noted earlier, it can impact financial development, which in turn could affect growth via two primary channels: capital accumulation and technological innovation. For example, in a well-developed financial system, financial intermediaries can identify entrepreneurs with innovative goods and production processes, which boosts a rate of technological innovation (King and Levine, 1993). Lastly, financial integration can impact growth also by facilitating entrepreneurial activity. The importance of entrepreneurship in the process of economic growth pertains to its two major roles: new entry and innovation (Wennekers and Thurik, 1999). The creation of new organization (start-up) is the main form of market entry. According to the traditional neo-classical theory, the start-ups are attracted by the excess profitability resulting from the lack of competitors in the industry and the presence of new firms helps to achieve market equilibrium. The second role of entrepreneurship, innovation, was emphasized by Schumpeter (1934) as a main determinant of economic development. An innovating entrepreneur introduces new inventions and ideas and transforms them into new products, services, or technological processes. The process of eliminating incumbent firms from the market by innovating entrepreneurs is called "creative destruction" in Schumpeterian terms. Parker (2018) also points out entrepreneurs' role as promoters and exploiters of knowledge spillovers. This is, entrepreneurs do not have to be innovators themselves, but they still can contribute to growth by commercializing new economic knowledge (e.g. Schmitz, 1989; Audretsch and Keilbach, 2007; Braunerhjelm, 2010). However, some prominent scholars have argued that the outcome of entrepreneurship depends on the quality of entrepreneurial activity. In their view, the allocation of entrepreneurial resources to growth-inducing activities is encouraged by favourable institutional environment (e.g. Baumol, 1990; Baumol and Strom, 2007; Acs et al., 2018).

Economic growth, being associated with higher demand for goods and services, can stimulate creation of new businesses (Reynolds et al., 1994). Hence, *de facto* financial integration increases entrepreneurial activity through economic growth. The impact of growth on poverty, however is more complex and is explained by two dominant strands of thought: the broad-based growth and the pro-poor growth approaches (Akoum, 2008).

The advocates of the first strand, popular in the postwar period, believe that what is good for growth must be good for the poor due to the “trickle-down” effect (Goudie and Ladd, 1999). Dollar and Kraay (2002), for example, support this view by finding that, on average, incomes of the poorest fifth of societies, rise proportionately with average incomes. Dollar et al. (2016) report the same results for the poorest two quintiles. The pro-poor growth³⁴ proponents, on the other hand, argue that growth itself is not a sufficient condition for poverty reduction (Akoum, 2008) and it should be accompanied by the improvement of other dimensions of development, such as better policies, to benefit the poor. There are two approaches to defining pro-poor growth: an absolute and a relative concept (Nissanke and Thorbecke, 2006). The absolute concept views pro-poor growth as a growth in mean income that is beneficial for the poor in absolute terms. In practice, growth is pro-poor if it reduces poverty measured by some agreed indicators. The relative concept, on the other hand, defines pro-poor growth as a “situation in which any distributional shifts accompanying economic growth favour the poor, meaning that poverty falls more than it would have if all incomes had grown at the same rate” (Ravallion, 2004, p. 2). In other words, growth must be distribution improving in order to be perceived as pro-poor. Hence, it is required that incomes of the poor have a faster growth rate than incomes of non-poor.

1.8.2. Effects of *de jure* financial integration

De jure FI can play a strong disciplining role in the economy, causing anticipation effect among local financial institutions. In fact, domestic banks, being aware that loosening capital account restrictions might lead to an entry of foreign players and higher competition, can be more motivated to shift their capital allocation towards opaque or soft-information borrowers. As a result, more credit becomes available to the poor and entrepreneurial firms, increasing financial inclusion.

De jure FI can also lead to an improved domestic business environment. Government, expecting a higher foreign capital influx after relaxing capital restrictions, might be more willing to relax formal business entry barriers. In fact, Norback et al. (2014) prove that globalization, a part of which is financial openness, induces government to reduce entry fee for entrepreneurs. As they explain, in more open economies, foreign firm presence might crowd-out potential domestic entrepreneurs, decreasing marginal revenue from the entry fee for government. Furthermore, marginal revenues from lobbying contributions also fall as domestic incumbents are discouraged from lobbying for higher fees. This is caused by the fact that incumbents must compete with foreign players now,

³⁴ See Klasen (2003) for a more detailed discussion on defining and measuring pro-poor growth.

who are not affected by the fee. Furthermore, when high entry fee discourages domestic entrepreneurial innovation and entry, the expected reward to innovation increases for foreign firms, which in turn rises probability of foreign entry. In this case, incumbents are, again, discouraged from lobbying for high business entry fee. The government also does not have an incentive to keep high entry fee as domestic entrepreneurs' probability to win the innovation game with foreign firms is decreased, leading to reduced probability of collecting the fee. As a result, *de jure* FI pushes government to lower business entry costs, which in turn have positive effect on entrepreneurship. The increased number of start-ups, by creating new jobs for the local labour force, can benefit the poor.

1.9. When is financial integration beneficial?

Despite the neoclassical economists' optimism, financial integration is not always beneficial for the poor. Section 1.8 shows that there are many channels through which financial integration can negatively impact poverty. The contradicting results of financial integration have encouraged researchers to define the circumstances under which integration into the world's financial market brings net benefit. The existing literature suggests two hypotheses that can explain the contradicting effects of integration: composition hypothesis and threshold hypothesis (Wei, 2006).

Many researchers have pointed out that the effect of financial integration relies heavily on the composition of capital flows³⁵ (e.g., Prasad et al., 2003, Aisbett et al., 2007). Some types of capital flows are perceived to be less beneficial than the others due to their characteristics, mainly the easiness of their reversal. It has been concluded that FDI, due to its sunk cost nature, displays little reversibility and therefore, it is the most beneficial type of flow for recipient countries. It does not only increase economic growth, but also reduces poverty (e.g., Reisen and Soto, 2001; Agenor, 2004). The least favourable type of capital flow is probably short-term bank lending, which can be easily reversed. It is regarded as a trigger of the Asian financial crisis as it constituted the principal component of the capital flow reversal in this region (Williamson, 2001).

Furthermore, the effect of financial integration can also be affected by the direction of capital flows. For example, capital outflow (also referred to as capital flight) may raise the same problems as capital flow reversal (Williamson, 2001).

³⁵ This view was challenged by Claessens et al. (1994), who found that the volatility of the flow does not depend on the type of capital flows. However, the methodology used in this paper has been widely criticised by other researchers (e.g., Williamson, 2001; Reisen and Soto, 2001).

The threshold hypothesis states that a country can benefit from financial integration only when it has achieved certain minimum conditions (Wei, 2006). The theoretical study developed by Kose et al. (2006) has defined the set of factors that may shape the financial integration – growth relationship. One of the factors is financial market development. As shown in Aghion et al. (2003) framework, the full liberalization of capital flows and full openness of the economy to foreign lending may cause destabilization of economy and slump if the financial sector is not well-developed. Moreover, the inadequate financial sector liberalizations have heavily contributed to crises that were associated with financial integration (Mishkin, 2006).

The qualities of institutions, as well as corporate and public governance also affect outcomes of financial integration. It is argued that they affect the allocation of resources in the economy and the composition of capital inflows. As mentioned earlier, the latter is particularly important as it has a predictive power for financial crises. The more short-term and foreign currency debts in the composition of inflows, the higher the possibility of currency crises occurrence (Kose et al., 2009). Moreover, weak institutions are perceived to be a cause of flawed macroeconomic and structural policies, which also lead to crises (Acemoglu and Tchaicharoen, 2003).

Finally, weak macroeconomic policies may increase the risk of crises from financial integration. For example, the fixed exchange rate regimes' cost is the loss of monetary independence. The latter, combined with open financial account, can cause currency crises. Similarly to strong policies, trade openness also reduces the probability of crises associated with financial integration. By causing smaller real exchange rate depreciations, which accompany current account adjustment, it makes countries less vulnerable to financial crises and sudden stop of capital inflows (Kose et al., 2009).

1.10. Empirical methodology

The remaining chapters of this thesis are dedicated to an empirical evaluation of the relationship between financial integration and poverty (Chapter 2), entrepreneurship (Chapter 3), and financial inclusion (Chapter 4). The econometric methods used in the empirical chapters are important tools to test relevant, and often contradicting, theories, some of which are briefly mentioned in Section 1.8. The different nature of the data used in each chapter and the presence of various econometric issues call for an application of a diverse range of methodology.

In Chapter 2, a dynamic panel data model is developed to account for the persistence nature of poverty (i.e. past values affect present outcomes). To address the endogeneity

issue caused by the inclusion of lagged poverty variable among the regressors, the system GMM is used. In Chapter 3, we examine how financial integration, measured at the country-level, affects the probability of becoming nascent entrepreneurs. The multilevel multinomial analysis is conducted to account for the fact that our dependent variable is nominal with three categories (i. e. not nascent entrepreneurs, necessity-driven nascent entrepreneurs, opportunity-driven nascent entrepreneurs), and that the dataset has a hierarchical structure, where individuals are nested within country-year. The multilevel approach allows us to address unobserved heterogeneity within the context of cross-country and cross-time by controlling for clustering of data within country-year. In the final empirical chapter, which studies the impact of financial integration on financial inclusion, the instrumental variable approach is applied. By using internal instruments, we can address the endogeneity issue caused by reverse causality between the dependent variables and some of the regressors.

1.11. Conclusions

The objective of this chapter was to explore the existing definitions and measurements of financial integration, poverty, entrepreneurship, and financial inclusion. The in-depth analysis allowed to select the most appropriate definitions and measures to be adapted in the empirical part of this thesis. Furthermore, a brief analysis of potential linkages between the four research subjects laid a theoretical ground for the next chapters, which empirically investigate the effect of FI on each of the phenomena: poverty incidence (Chapter 2), entrepreneurship (Chapter 3), and financial inclusion (Chapter 4).

It is concluded that the effects of *de jure* and *de facto* FI should be investigated separately as they can affect other phenomena through different mechanisms. Among *de facto* measures, the quantity-based ones are selected to be the most appropriate for this thesis. Regarding poverty, despite the multidimensional nature of this phenomenon, the monetary measure is identified to be the most suitable in the FI-poverty analysis thanks to its universality and data availability, especially in developing countries. Due to drawbacks of attitude (e.g. inability to capture entrepreneurial activity) and framework measures (e.g. biased sample selection process) of entrepreneurship, the output measures are selected to be used in the upcoming empirical investigation. Finally, it is decided that supply-side measures of financial inclusion have an important advantage over demand-side ones from the perspective of this thesis, i.e. they provide a clear distinction between household and SMEs accounts.

The analysis of potential linkages revealed that the relationship between FI and other phenomena is complex with no clear-cut conclusion. It is apparent that financial integration can have both positive and negative effects through different mechanisms, which can be explained by the composition hypothesis. In essence, the net benefit of financial integration can be obtained when countries receive less reversible types of capital flows, such as FDI. Hence, to test the composition hypothesis, different types of capital flows should be considered in the empirical exploration to obtain a full picture of the FI effects.

References

- Acemoglu, D., & Tchaicharoen, Y. (2003) Institutional Causes, Macroeconomic Symptoms: Volatility, Crises, and Growth. *Journal of Monetary Economics*, vol. 50, pp. 49-123.
- Acs, Z. J., Desai, S., Klapper, L. F. (2008) What Does “Entrepreneurship” Data Really Show? *Small Business Economics*, vol. 31, pp. 265-281.
- Acs, Z. J., Autio, E., Szerb, L. (2014) National Systems of Entrepreneurship: Measurement Issues and Policy Implications. *Research Policy*, vol. 43, pp. 476-494.
- Acs, Z. J., Estrin, S., Mickiewicz, T., Szerb, L. (2018) Entrepreneurship, Institutional Economics, and Economic Growth: An Ecosystem Perspective. *Small Business Economics*, vol. 51, pp. 501-514.
- Agenor, P.-R. (2002) Macroeconomic Adjustment and the Poor: Analytical Issues and Cross-Country Evidence. *Journal of Economic Surveys*, vol. 18, pp. 351-408.
- Agenor, P.-R. (2004) Does Globalization Hurt the Poor? *International Economics and Economic Policy*, vol. 1, pp. 21-51.
- Aghion, P. et al. (2003) Financial Development and the Instability of Open Economies. *Journal of Monetary Economics*, vol. 51, pp. 1077-1106.
- Aisbett, E., Harrison, A., Zwane, A. (2006) Globalization and Poverty: What Is the Evidence? *MPRA Paper No. 36595*.
- Akoum, I. F. (2008) Globalization, Growth, and poverty: The Missing Link. *International Journal of Social Economics*, vol. 35, pp. 226-238.
- Alesina, A., Grilli, V., Milesi-Ferretti, G. M. (1993) The Political Economy of Capital Controls. *NBER Working Paper Series*, Working Paper no. 4353.
- Alesina, A. and Dollar, D. (2000) Who Gives Foreign Aid to Whom and Why? *Journal of Economic Growth*, vol. 5, pp. 33-63.
- Alfaro, L. and Charlton, A. (2007) International Financial Integration and Entrepreneurial Firms Dynamics. *NBER Working Paper*, no. 13118.
- Alkire, S. (2005) Why the Capability Approach? *Journal of Human Development*, vol. 6, pp. 115-135.
- Alkire, S. and Jahan, S. (2018) The new Global MPI 2018: Aligning with the Sustainable Development Goals. HDRO Occasional Paper, United Nations Development Programme (UNDP).
- Anzoategui, D., Demirguc-Kunt, A., and Martinez Peria, M. S. (2014) Remittances and Financial Inclusion: Evidence from El Salvador. *World Development*, vol. 54, pp. 338-349.
- Arestis, P. and Caner, A. (2009) Financial Liberalization and the Geography of Poverty. *Cambridge Journal of Regions, Economy and Society*, vol. 2, pp. 229-244.

- Arestis, P. and Cener, A. (2010) Capital account liberalisation and poverty: how close is the link? *Cambridge Journal of Economics*, vol. 34, pp. 295-323.
- Atkinson, A. B. (1999) *The Economic Consequences of Rolling Back the Welfare State*. MIT Press, Cambridge, Massachusetts.
- Baele, L., Ferrando, A., Hordahl, P., Krylova, E., Monnet, C. (2004) Measuring Financial Integration in the Euro Area. *European Central Bank Occasional Paper Series*, no. 14.
- Baker Collins, S. An Understanding of Poverty from Those Who Are Poor. *Action Research*, vol. 3, pp. 9-31.
- Baldacci, E., de Mello, L., Inchauste, G. (2002) Financial Crises, Poverty, and Income Distribution. *IMF Working Paper*, no. WP/02/04.
- Baltzer, M., Cappiello, L., De Santis, R. A., Manganelli, S. (2008) Measuring Financial Integration in New EU Member States. *European Central Bank Occasional Paper Series*, no. 81.
- Baumol, W. J. (1990) Entrepreneurship: productive, unproductive and destructive. *Journal of Political Economy*, vol. 98, pp. 893-921.
- Baumol, W. J. and Strom, R. J. (2007) Entrepreneurship and Economic Growth. *Strategic Entrepreneurship Journal*, vol. 1, pp. 233-237.
- Beland, D. (2007) The Social Exclusion Discourse: Ideas and Policy Change. *Policy & Politics*, vol. 35, pp. 123-139.
- Bellido, N. P., Jano, M. D., Lopez Ortega, F. J., Martin-Guzman, M. P., Toledo, M. I. (1998) The measurement and Analysis of Poverty and Inequality: An Application to Spanish Conurbations. *International Statistical Review*, vol. 66, pp. 115-131.
- Bordo, M. D., Eichengreen, B., Irwin, D. A. (1999) Is Globalization Today Really Different Than Globalization a Hundred Years Ago? *NBER Working Paper Series*, Working Paper no. 7195.
- Brandolini, A., Magri, S., Smeeding, T. M. (2010) Asset-Based Measurement of Poverty. *Journal of Policy Analysis and Management*, vol. 29, pp. 267-284.
- Bruhn, M. and Love, I. (2014) The Real Impact of Improved Access to Finance: Evidence from Mexico. *Journal of Finance*, vol. 6, pp. 1347-1376.
- Bygrave, W. D. and Hofer, C. W. (1992) Theorizing about Entrepreneurship. *Entrepreneurship Theory and Practice*, vol. 16, pp. 13-22.
- Calvo, G. A., Leiderman, L., Reinhart, C. M. (1996) Inflows of Capital to Developing Countries in the 1990s. *Journal of Economic Perspectives*, vol. 10, pp. 123-139.
- Cantillon, R. (1775) *An Essay in Economic Theory*. An English translation of Richard Cantillon's *Essai sur la Nature du Commerce en General*. Ludwig von Mises Institute, published in 2010.
- Chinn, M. D. and Ito, H. (2008) A New Measure of Financial Openness. *Journal of Comparative Policy Analysis: Research and Practise*, vol. 10, pp. 309-322.

- Davidsson, P. (2016) *Researching Entrepreneurship. Conceptualization and Design*. Springer International Publishing Switzerland.
- Deaton, A. (2005) Measuring Poverty in a Growing World (Or Measuring Growth in a Poor World). *The Review of Economics and Statistics*, vol. 87, pp. 1-19.
- Demirguc-Kunt A. and Klapper, L. (2012) Measuring Financial Inclusion. The Global Findex Database. *World Bank Policy Research Working Paper*, no. 6025.
- Dewilde, C. (2008) Individual and Institutional Determinants of Multidimensional Poverty: A European Comparison. *Social Indicators Research*, vol. 86, pp. 233-256.
- Dollar, D., Kleineberg, T., Kraay, A. (2016) Growth still is good for the poor. *European Economic Review*, vol. 81, pp. 68-85.
- Dollar, D. and Kraay, A. (2002) Growth Is Good for the Poor, *Journal of Economic Growth*, vol. 7, pp. 195-225.
- Dornbusch, R., Park, Y. C., Classens, S. (2000) Contagion: Understanding How It Spreads. *The World Bank Research Observer*, vol. 15, pp. 177-197.
- Easterly, W. and Fischer, S. (2001) Inflation and the Poor. *Journal of Money, Credit and Banking*, vol. 33, pp. 160-178.
- EBRD (2018) Life in Transition Survey (LITS). [Online] Available from: <https://www.ebrd.com/cs/Satellite?c=Content&cid=1395236498263&d=Mobile&pagina me=EBRD%2FContent%2FContentLayout> [Accessed 24th Nov 2018].
- Edison, H. J., Klein, M. W., Ricci, L., Sloek, T. (2004) Capital Account Liberalization and Economic Performance: Survey and Synthesis. *IMF Staff Papers*, vol. 51, pp. 220-256.
- Edwards, S. (2001) Capital Mobility and Economic Performance: Are Emerging Economies Different? *NBER Working Paper Series*, Working Paper no. 8076.
- ESS (2018) Subjective Well-Being, Social Exclusion, Religion, National and Ethnic Identity. [Online] Available from: <https://www.europeansocialsurvey.org/data/themes.html?t=wellbeing> [Accessed 24th Nov 2018].
- Ferreira, F., Prennushi, G., Ravallion, M. (1999) Protecting the Poor from Macroeconomic Shocks: An Agenda for Action in a Crisis and Beyond. *World Bank Policy Research Working Paper*, no. 2160.
- Figini, P. and Santarelli, E. (2006) Openness, Economic Reforms, and Poverty: Globalization in Developing Countries. *The Journal of Developing Areas*, vol. 39, pp. 129-151.
- Foster, J. E. and Shekely, M. (2008) Is Economic Growth Good for the Poor? Tracking Low Incomes Using General Means. *International Economic Review*, vol. 49, pp. 1143 – 1172.
- Frankel, J. A. and Rose, A. K. (1996) Currency Crashes in Emerging Markets: An Empirical Treatment. *Journal of International Economics*, vol. 41, pp. 351-366.

- Frey, B. S. and Stutzer, A. (2002) What Can Economists Learn from Happiness Research? *Journal of Economic Literature*, vol. XL, pp. 402-435.
- Gallup (2010) Entrepreneurship in the EU and Beyond. Analytical Report [Online] Available from: http://ec.europa.eu/commfrontoffice/publicopinion/flash/fl_283_en.pdf [Accessed 7th Sep 2017].
- Garcia-Herrero, A. and Wooldridge, P. (2007) Global and Regional Financial Integration: Progress in Emerging Markets. *BIS Quarterly Review*, September 2007.
- Gaertner, W. (1993) Amartya Sen: Capability and Well-Being, in Nussbaum, M. and Sen, A. (eds) *The Quality of Life*. Oxford University Press.
- Gartner, W. B. (1988) Who Is the Entrepreneur? Is the Wrong Question. *American Journal of Small Business*, vol. 12, pp. 11-32.
- GEM (2017a) Challenges in NES Data Collection [Online] Available from: <http://www.gemconsortium.org/wiki/1169> [Accessed 10 Oct 2017].
- GEM (2017b) Overview of the NES Process [Online] Available from: <http://www.gemconsortium.org/wiki/1165> [Accessed 10 Oct 2017].
- GEM (2017c) What is the National Expert Survey (NES)? [Online] Available from: <http://www.gemconsortium.org/wiki/1142> [Accessed 10 Oct 2017].
- Gianetti, M. And Ongena (2005) Financial Integration and Entrepreneurial Activity. *European Central Bank, Working Paper Series*, no. 498.
- Giannetti, M. and Ongena, S. (2009) Financial Integration and Firm Performance: Evidence from Foreign Bank Entry in Emerging Markets. *Review of Finance*, vol. 13, pp. 181-223.
- Goudie, A. and Ladd, P. (1999) Economic Growth, Poverty and Inequality. *Journal of International Development*, vol. 11, pp. 177-195.
- Guiso, L., & Schivardi, F., (2005) Learning to be an entrepreneur. Discussion Paper no. 5290, Centre for Economic Policy Research.
- Haan, A. (1998) Social Exclusion. An Alternative Concept for the Study of Deprivation? *IDS Bulletin*, vol. 29, pp. 10-19.
- Harrison, A. (2006) Globalization and Poverty. *NBER Working Paper Series*, Working Paper 12347.
- Henrekson, M. and Sanandaji, T. (2013) Small Business Activity Does Not Measure Entrepreneurship. Working Paper Series 959, Research Institute of Industrial Economics.
- Herrington, M., Kew, J., Kew, P. (2010) Tracking Entrepreneurship in South Africa: A GEM Perspective. [Online] Available from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.475.278&rep=rep1&type=pdf> [Accessed 15 Oct 2017].

- Heshmati, A. (2004) The Relationship between Income Inequality, Poverty and Globalisation. *IZA Discussion Paper*, no. 1277.
- IMF (1993) Balance of Payments Manual. [Online] Available from: <http://www.imf.org/external/np/sta/bop/BOPman.pdf> [Accessed 15th Sept 2012].
- IMF (2012) History. [Online] Available from: <http://www.imf.org/external/about/history.htm> [Accessed 10th Nov 2012].
- Islam, R. (2004) The Nexus of Economic Growth, Employment and Poverty Reduction: An Empirical Analysis. *International Labour Office, Issues in Employment and Poverty Discussion Paper 14*.
- Jalilian, H. and Kirkpatrick, C. (2002) Financial Development and Poverty Reduction in Developing Countries. *International Journal of Finance and Economics*, vol. 7, pp. 97-108.
- Johnston, R. B. and Tamirisa, N. T. (1998) Why Do Countries Use Capital Controls? *IMF Working Paper*, no. WP/98/181.
- Kanbur, R. (2002) Conceptual Challenges in Poverty and Inequality: One Development Economists's Perspective. *Cornell University Working Paper No. 2002-09*.
- Kanbur, R. (2005) Growth, Inequality and Poverty: Some Hard Questions. *Journal of International Affairs*, vol. 58, pp. 223-232.
- King, R. G. and Levine, R. (1993) Finance, Entrepreneurship, and Growth: Theory and Evidence. *Journal of Monetary Economics*, vol. 32, pp. 513-42.
- Kirzner, I. M., (1973) *Competition & Entrepreneurship*. University of Chicago Press, Chicago.
- Klassen, S. (2003) In Search of the Holy Grail: How to Achieve Pro-Poor Growth. In Tungodden, B. et al. (2003) *Toward Pro-Poor Policies. Aid, Institutions, and Globalization*. 5th Annual World Bank Conference on Development Economics – Europe.
- Knight, F. H. (1921) *Risk, Uncertainty, and Profit*. Houghton-Mifflin, Boston, MA.
- Kose, M. A. Prasad, E., Rogoff, K., Wei, S-J. (2009) Financial Globalization: A Reappraisal. *International Monetary Fund Staff Papers*, vol. 56, pp. 8-62.
- Krugman, P. R., Obstfeld, M., Melitz, M. J. (2015) *International Economics. Theory and Policy*. Tenth Edition. Pearson Education Limited, Harlow England.
- Kucukaksoy, I. (2011) Adam Smith's Conceptual Contributions to International Economics: Based on the Wealth of Nations. *Business and Economic Horizons*, vol. 4, pp. 108-119.
- Kuznets, S. (1955) Economic Growth and Income Inequality. *The American Economic Review*, vol. 45, pp. 1-28.
- Lamont, O. A. and Thaler, R. H. (2003) The Law of One Price in Financial Markets. *Journal of Economic Perspectives*, vol. 17, pp. 191-202.

- Lane, P. R. and Milesi-Ferreti, G. M. (2001) The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Countries. *Journal of International Economics*, vol. 55, pp. 223-250.
- Lane, P. R. and Milesi-Ferreti, G. M. (2007) The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004. *Journal of International Economics*, vol. 73, pp. 263-294.
- Levine, R. (1997) Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, vol. 35, pp. 688-726.
- Low, M. and MacMillan, I. (1988) Entrepreneurship: Past Research and Future Challenges. *Journal of Management*, vol. 14, pp. 139-161.
- Lunati, M., Meyer zu Schlochtern, J., Sargsyan, G. (2010) Measuring Entrepreneurship. The OECD-Eurostat Entrepreneurship Indicators Programme. *OECD Statistics Brief*, November, no. 15.
- Masten, A. B., Coricelli, F., Masten, I. (2008) Non-linear Growth Effects of Financial Development: Does Financial Integration Matter? *Journal of International Money and Finance*, vol. 27, pp. 295-313.
- McKernan, S. M. (2010) Is Poverty Incompatible with Asset Accumulation? [Online] Available from: <http://www.urban.org/UploadedPDF/412391-Poverty-Incompatible-with-Asset-Accumulation.pdf> [Accessed 5th March 2012].
- McKinnon, R. I. and Pill, H. (1997) Credible Economic Liberalizations and Overborrowing. *The American Economic Review*, vol. 87, pp. 189-193.
- Merton, R. C. and Bodie, Z. (1995) A Conceptual Framework for Analyzing the Financial Environment. In Dwight B. C. et al. (1995) *The Global Financial System: A Functional perspective*. Harvard Business School Press, p. 3.
- Mian, A. (2006) Distance constraints: The Limits of Foreign Lending in Poor Economies. *The Journal of Finance*, vol. 61, pp. 1465-1505.
- Minniti, M. and Levesque, M. (2010) Entrepreneurial Types and Economic Growth. *Journal of Business Venturing*, vol. 25, pp. 305-314.
- Mishkin, F. S. (2006) *The Next Great Globalization: How Disadvantaged Nations Can Harness Their Financial Systems to Get Rich*. Princeton University Press, New Jersey.
- Mody, A. and Murshid, A. P. (2005) Growing up with Capital Flows. *Journal of International Economics*, vol. 65, pp. 249-266.
- Montiel, P. (1994) Capital Mobility in Developing Countries: Some Measurement Issues and Empirical Estimates. *The World Bank Economic Review*, vol. 8, pp. 311-350.
- Montiel, P. and Reinhart, C. M. (1999) Do Capital Controls and Macroeconomic Policies Influence the Volume and Composition of Capital Flows? Evidence from the 1990s. *Journal of International Money and Finance*, vol. 18, pp. 619-635.

Mussa, M. and Goldstein, M. (1993) The Integration of World Capital Markets. [Online] Available from: <http://www.kc.frb.org/PUBLICAT/SYMPOS/1993/s93mussa.pdf> [Accessed 15th Oct 2012].

Narayan, D., Patel, R., Schafft, K., Rademacher, A., Koch-Schulle, S., (2000a) *Voices of the Poor. Can Anyone Hear Us? Voices From 47 Countries*. Published for the World Bank, Oxford University Press, New York.

Narayan, D., Chambers, R., Shah, M. K., Petesch, P. (2000b) *Voices of the Poor. Crying Out for Change*. Published for the World Bank, Oxford University Press, New York.

Narayan, D. and Petesch, P. (2002) *Voices of the Poor. From Many Lands*. Published for the World Bank, Oxford University Press, New York.

Nissanke, M. and Thorbecke, E. (2006) Channels and Policy Debate in the Globalization-Inequality-Poverty Nexus. *World Development*, vol. 34, pp. 1338-1360.

Nolan, B. and Whelan, C. T. (2010) Using Non-Monetary Deprivation Indicators to Analyze Poverty and Social Exclusion: Lessons from Europe? *Journal of Policy Analysis and Management*, vol. 29, pp. 305-325.

Norback, P-J., Persson, L., Douhan, R. (2014) Entrepreneurship Policy and Globalization. *Journal of Development Economics*, vol. 110, pp. 22-38.

Nussbaum, M. (2003) Capabilities as Fundamental Entitlements: Sen and Social Justice. *Feminist Economics*, vol. 9, pp. 33-59.

Obstfeld, M. (1993) International Capital Mobility in the 1990s. *NBER Working Paper Series*, Working Paper No. 4534.

Obstfeld, M. (1994) Risk-Taking, Global Diversification, and Growth. *The American Economic Review*, vol. 84, pp. 1310-1329.

Obstfeld, M. and Taylor, A. M. (2003) Globalization and Capital Markets. In Bordo et al. (2003) *Globalization in Historical Perspective*, University of Chicago Press.

OECD (2017a) Entrepreneurship at a Glance 2017 [Online] Available from: <http://www.oecd-ilibrary.org/docserver/download/3017051e.pdf?expires=1508162071&id=id&acname=guest&checksum=5D8067B358042FFC1A61CD2617DECF87> [Accessed 17 Oct 2017].

OECD (2017b), Self-employment rate (indicator). [Online] Available from: <https://doi.org/10.1787/fb58715e-en> [Accessed 17 Oct 2017].

OPHI (2018) Background to the MPI. [Online] Available from: <https://ophi.org.uk/multidimensional-poverty-index/background-to-the-mpi/> [Accessed 24th Nov 2018].

Parker, S. C., (2018) *The Economics of Entrepreneurship*. Second edition. Cambridge University Press, Cambridge.

Praag, C. M. (1996) *Determinants of Successful Entrepreneurship*. Amsterdam, Thesis Publishers.

- Prasad, E. S., Rogoff, K., Wei S-J., Kose, M. A. (2003) Effects of Financial Globalization on Developing Countries: Some Empirical Evidence. *International Monetary Fund Occasional Paper*, no. 220.
- Quinn, D. (1997) The Correlates of Change in International Financial Regulation. *The American Political Science Review*, vol. 91, pp. 531-551.
- Ravallion, M. (2000) Should Poverty Measures Be Anchored to the National Accounts? *Economic and Political Weekly*, vol. 35, pp. 3245-3252.
- Ravallion, M. (2001) Growth, Inequality and Poverty: Looking Beyond Averages. *World Development*, vol. 29, pp. 1803-1815.
- Ravallion, M. (2003) The Debate on Globalization, Poverty and Inequality: Why Measurement Matters. *International Affairs*, vol. 79, pp. 739-753.
- Ravallion, M (2004) Pro-Poor Growth: A Primer. *World Bank Policy Research Working Paper*, No. 3242.
- Reisen, H. and Soto, M. (2001) Which Types of Capital Inflows Foster Developing-Country Growth? *International Finance*, vol. 4, pp. 1-14.
- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P., Chin, N. (2005) Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998-2003. *Small Business Economics*, vol. 24, pp. 205-231.
- Ringen, S. (1988) Direct and Indirect Measures of Poverty. *Journal of Social Policy*, vol. 17, pp. 351-365.
- Robeyns, I. (2003) Sen's Capability Approach and Gender Inequality: Selecting Relevant Capabilities. *Feminist Economics*, vol. 9, pp. 61-92.
- Robeyns, I. (2005) The Capability Approach: A Theoretical Survey. *Journal of Human Development*, vol. 6, pp. 93-117.
- Robeyns, I. (2006) The Capability Approach in Practice. *The Journal of Political Philosophy*, vol. 14, pp. 351-376.
- Rodrik, D. (1997) *Has Globalization Gone Too Far?* Institute for International Economics, Washington DC.
- Rodrik, D. (1998) Who Needs Capital Account Convertibility? In Should the IMF Pursue Capital Account Convertibility, *Essay in International Finance*, no. 207.
- Rodrik, D. (2010) Greek Lessons for the World Economy [Online] Available from: <http://www.project-syndicate.org/commentary/greek-lessons-for-the-world-economy> [Accessed 10th Nov 2012].
- Room (1999) Social exclusion, solidarity and the challenge of globalization. *International Journal of Social Welfare*, vol. 8, pp. 166-174.
- Ruggeri Laderchi, C. (1997) Poverty and Its Many Dimensions: The Role of Income as an Indicator. *Oxford Agrarian Studies*, vol. 25, pp. 345-360.

- Ruggeri Laderchi, C., Saith, R., Steward, F. (2003) Does it Matter that we do not agree on the definition of Poverty? A Comparison of Four Approaches. *Oxford Development Studies*, vol. 31, pp. 243-274.
- Saith, R. (2001) Social Exclusion: The Concept and Application to Developing Countries. *Queen Elizabeth House Working Paper Series*, no. QEHWPS72, University of Oxford.
- Sala-i-Martin, X. (2006) The World Distribution of Income: Falling Poverty and... Convergence, Period. *The Quarterly Journal of Economics*, vol. 121, pp. 351-397.
- Santarelli, E. and Figini, P. (2002) Does Globalization Reduce Poverty? Some Empirical Evidence for the Developing Countries. [Online] Available from: <http://amsacta.unibo.it/633/>
- Schindler, M. (2009) Measuring Financial Integration: A New Data Set. *IMF Staff Papers*, vol. 56, pp. 222-238.
- Schmukler, S. L. (2003) Financial Globalization: Gain and Pain for Developing Countries. *Federal Reserve Bank of Atlanta Economic Review*, vol. 89, pp. 39-66.
- Schumpeter, J. A. (1934) *The Theory of Economic Development*. Cambridge, MA, Harvard University.
- Sen, A. (1993) Capability and well-being, in: Nussbaum, M. C. and Sen, A. (eds) *The Quality of Life*, Oxford, Clarendon Press, pp. 30-53.
- Sen, A. (1999) *Development as Freedom*. Oxford, Oxford University Press.
- Sen, A. (2004) Capabilities, Lists, and Public Reason: Continuing the Conversation. *Feminist Economics*, vol. 10, pp. 77-80.
- Shane, S., and Venkataraman, S. (2000) The Promise of Entrepreneurship as a Field of Research. *Academy of Management Review*, vol. 25, pp. 217-226.
- Short, J. C., Ketchen Jr., D. J., Combs, J. G., Ireland, R. D. (2010) Research Methods in Entrepreneurship. Opportunities and Challenges. *Organizational Research Methods*, vol. 13, pp. 6-15.
- Silver, H. and Miller, S. M. (2003) Social Exclusion. The European Approach to Social Disadvantage. *Indicators*, vol. 2, pp. 1-17.
- Smith, A. (1776) *An Enquiry into the Nature and Causes of the Wealth of Nations*. London, Methuen & Co., book 5, ch. 2.
- Stel, A., Carree, M., Thurik, R. (2005) The Effect of Entrepreneurial Activity on National Economic Growth. *Small Business Economics*, vol. 24, pp. 311-321.
- Swamy, V. (2014) Financial Inclusion, Gender Dimension, and Economic Impact on Poor Households. *World Development*, vol. 56, pp. 1-15.
- Thorbecke, E. (2005) Multi-dimensional Poverty: Conceptual and Measurement Issues. [Online] Available from:

<http://www.arts.cornell.edu/econ/et17/Erik%20Thorbecke%20files/Multi1.pdf> [Accessed 10th February 2012].

Townsend, P. (1979) *Poverty in the United Kingdom*. London, Penguin.

UNDP (2011) Human Development Index. [Online] Available from:
<http://hdr.undp.org/en/statistics/hdi/> [Accessed 15th June 2012].

UNDP (2018) Human Development Indices and Indicators. 2018 Statistical Update. [Online] Available from:
http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf [Accessed 24th Nov 2018].

Wei, S-J. (2006) Connecting Two Views on Financial Globalization: Can We Make Further Progress? *Journal of the Japanese and International Economies*, vol. 20, pp. 459-481.

Wennekers, S. and Thurik, R. (1999) Linking Entrepreneurship and Economic Growth. *Small Business Economics*, vol. 13, pp. 27-55.

Williamson, J. (2001) Issues Regarding the Composition of Capital Flows. *Development Policy Review*, vol. 19, pp. 11-29.

World Bank (2001) *World Development Report 2000/2001: Attacking Poverty*. World Bank and Oxford University Press.

World Bank (2002) Globalization, Growth, and Poverty. Building an Inclusive World Economy. *A World Bank Policy Research Report*, no. 23591.

World Bank (2012) History. [Online] Available from:
<http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/0,,contentMDK:20653660~menuPK:72312~pagePK:51123644~piPK:329829~theSitePK:29708,00.html> [Accessed 10th Nov 2012].

World Bank (2017a) About Doing Business [Online] Available from:
<http://www.doingbusiness.org/~media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB17-Chapters/DB17-About-Doing-Business.pdf> [Accessed 27 Nov 2017].

World Bank (2017b) Entrepreneurship Database [Online] Available from:
<http://www.doingbusiness.org/data/exploretopics/entrepreneurship/methodology> [Accessed 27 Nov 2017].

World Bank (2017c) Starting a Business Methodology [Online] Available from:
http://www.doingbusiness.org/Methodology/Starting-a-Business_ [Accessed 17 Oct 2017].

Chapter 2: Financial integration and poverty incidence and depth

2.1. Introduction

The Millennium Development Goal of reducing extreme poverty by half between 1990 and 2015 imposed a challenge of formulating effective poverty reduction strategies to policy makers around the globe. Although the target has been achieved, with the new Sustainable Development Goals set by the United Nations, where the first one is to eradicate extreme poverty by 2030, it is still essential to focus on the World's poor. Many researchers have attempted to identify and analyse possible poverty reduction mechanisms, relatively recently directing their attention to financial integration (FI), perceived as a new weapon against poverty.

Despite the importance of world poverty alleviation, the literature on the relationship between financial integration and poverty is surprisingly small. As explained by Harrison (2005), the FI-poverty links have not been adequately explored in the past as "researchers have typically chosen not to achieve mastery of both sub-disciplines" (p. 4). In fact, the existing empirical studies fail to account for the multidimensional nature of financial integration. In essence, each study focuses on only one aspect of this phenomenon, such as capital account restrictions or FDI flows. Since FI is a much broader concept, as shown in Chapter 1, restrictions and FDI are merely one of the dimensions of this phenomenon.

To fill the gap in the literature, the main objective of this paper is to examine how different types of financial integration affect poverty. Following Prasad et al. (2003), the difference between *de jure* and *de facto* financial integration is distinguished. The former is associated with policies on capital account liberalization, while the latter refers to actual capital mobility. Although it is widely perceived that *de jure* FI is a precursor of *de facto* FI, this is not necessarily the case (see Chapter 1). Therefore, we believe that it is necessary to include both *de jure* and *de facto* measures in the FI-poverty analysis to capture the effect of various aspects of financial integration.

We further decompose *de facto* FI according to asset classes in order to test the composition hypothesis, which states that the effect of financial integration relies heavily on the composition of capital flows (e.g. Prasad et al., 2003, Aisbett et al., 2006). It is perceived that asset categories that display little reversibility, such as FDI, are more beneficial for recipient countries, while easily reversible categories, such as short-term bank lending, are one of the main triggers of financial crises. Therefore, including

different measures of *de facto* financial integration in our analysis will allow us to obtain a more nuanced picture of the financial integration-poverty relationship.

Our main conclusion is that *de jure* and *de facto* FI have opposite effects on poverty. In essence, *de jure* FI is found to reduce poverty, while *de facto* FI increases the number of the poor. Hence, this study provides evidence that *de jure* FI can impact the poor through different mechanisms than *de facto* FI. In fact, relaxing capital account restrictions is not necessarily associated with higher capital flows, but it might still be sufficient to improve the livelihood of the World's poorest. We attribute this finding to the importance of disciplining role of *de jure* FI in an economy. Among the asset classes, only FDI appear to significantly affect poverty and hence, we could not find enough evidence to support or reject the composition hypothesis.

The paper is structured as follows. The existing empirical studies are summarized in Section 2.2. The empirical model and data used in this study are provided in Section 2.3. The preliminary analysis is reported in Section 2.4. The explanation of empirical method used, system GMM, and the overview of potential endogeneity problems are given in Section 2.5. The empirical results and their interpretation are reported in Section 2.6, followed by conclusions and limitations of this study in Section 2.7.

2.2. Literature Review

The relevant empirical papers are summarized in Table 1. The papers reviewed have a modest number of observations, ranging from as little as 40 to 173. Moreover, to reduce the number of gaps in the data, some papers use 3- or 5-year averages in the analysis. The majority of studies focuses on one of *de facto* financial integration measures, FDI, while using multiple different poverty measures. The analysis of each paper follows below.

Jalilian and Weiss (2002), using a fixed effect regression found that FDI inflows do not affect the income of the poorest 20% of population in 26 developing and developed countries. However, it becomes significant and positive when the data is limited to 5 ASEAN countries and merely 65 observations. Using the same econometric technique, Agenor (2004) reports that FDI flows do not impact poverty gap at both \$1.08/day and \$2.16/day in 16 developing countries. Figini and Santarelli's (2006) random effect regression results show that FDI inflows are positive and weakly significant only for relative poverty, measured as headcount index with 40% and 50% of mean income as poverty lines. Needless to say, these studies are not comparable due to different

measures of poverty used. Additionally, they do not deal properly with the possible simultaneity problem between poverty and some explanatory variables, such as GDP growth. Although Agenor (2004) and Figini and Santarelli (2006) attempt to overcome this problem by applying one-period lags in their models, this technique has been recently criticised for failing to solve the endogeneity issue (Bellemare et al., 2015).

To better account for simultaneity, Tsai and Huang (2007) apply an instrumental-variable estimation technique. Unlike previous studies, they also recognize the potential importance of FDI outflows. Their results show that both inward and outward FDI do not impact the share of the poorest 20% of Taiwan population, though outward FDI tends to have a negative effect as it is consistently negative across all specifications. Furthermore, the co-integration analysis reveals the presence of a long-term negative relation between outward FDI and income of the poor. Huang et al. (2010) extend Tsai and Huang's (2007) analysis to 12 East Asian and Latin American countries and report a significant and negative effect of both inward and outward FDI on poverty.

Finally, Arestis and Caner's (2010) paper is probably the most complex empirical study to date. Unlike the previous papers, it comes from the capital liberalization literature and uses *de jure* financial integration measure, KAOPEN. It recognizes that poverty can be affected by its past values and hence, estimates a dynamic panel data model using system GMM. Taking the data of all available developing countries in the period 1985-2005, it finds KAOPEN to reduce income of the poorest 20% and to increase poverty gap and headcount index. In other words, open capital account is found to be harmful for the poor.

It is difficult to draw strong conclusions from the limited number of papers above as they seem to have mixed results. Moreover, each of them focuses on only one dimension of financial integration, either restrictions on capital account (KAOPEN) or FDI. Hence, our main contribution to the existing literature is to account for multiple types of financial integration and to assess their potentially different impact on poverty.

Table 1. Financial integration-poverty empirical literature summary.

Author	Coverage	Variables	Methodology	Results	
Jalilian and Weiss (2002)	<ul style="list-style-type: none"> • 26 countries (18 developing, including 5 ASEAN, and 8 developed) • Time frame: 1981-1996 • 65-147 observations 	<ul style="list-style-type: none"> • FI: net FDI inflows • Poverty: share of the poorest quintile in national income or consumption 	<ul style="list-style-type: none"> • Level and 5-yearly averages • Fixed effect regression 	FDI inflows significant and positive for ASEAN countries only	
Agenor (2004)	<ul style="list-style-type: none"> • 16 developing countries • Time frame: 1984 - 1998 • 60 observations 	<ul style="list-style-type: none"> • FI: FDI flows to GDP • Poverty: poverty gap at \$1.08/day and \$2.16/day 	<ul style="list-style-type: none"> • OLS with fixed effect, using lagged values of GDP per capita, GDP growth, FDI and trade openness to account for possible simultaneity problem 	FDI insignificant	
Figini and Santarelli (2006)	<ul style="list-style-type: none"> • Absolute poverty: <ul style="list-style-type: none"> ○ 47-54 developing countries ○ Time frame: 1970, 1980, 1990, 1995 ○ 95-203 observations • Relative poverty: <ul style="list-style-type: none"> ○ 45-69 developing countries ○ Time frame: 1970-1998 ○ 98-166 observations 	<ul style="list-style-type: none"> • FI: gross and net inflows of FDI over GDP, FDI over total capital formation • Absolute poverty: headcount ratio at \$1 and \$2/day (World Bank); Sala-i-Martin's (2002) absolute number of poor at \$1 and \$2/day • Relative poverty: headcount index using 40% and 50% of the mean income as poverty lines (UNCTAD) 	<ul style="list-style-type: none"> • Levels and one-period lags (5-year average) to account for endogeneity • Random effect regression 	<ul style="list-style-type: none"> • Absolute poverty: FDI inflows positive although only rarely significant in the specifications run when using Sala-i-Martin poverty measure. FDI inflows insignificant when using World Bank and UNCTAD headcount ratios • Relative poverty: FDI inflows significant and positive, although not robust across specifications 	
Tsai and Huang (2007)	<ul style="list-style-type: none"> • Taiwan • Time frame: 1964 -2003 • 40 observations 	<ul style="list-style-type: none"> • FI: FDI outflows to GDP, FDI inflows to GDP • Poverty: share of the poorest quintile in national income or consumption 	<ul style="list-style-type: none"> • Co-integration analysis • Instrumental-variable estimation to account for simultaneity, using one- and two-period lagged dependent and explanatory variables, as well as one-period lagged error correction term as instruments 	<ul style="list-style-type: none"> • Co-integration analysis: existence of a long-term negative relation between outward FDI and the mean income of the poor • Instrumental-variable estimation: inward and outward FDI insignificant, though there are mild indications that outward FDI tends to have a negative effect 	
Huang et al. (2010)	<ul style="list-style-type: none"> • 12 East Asian and Latin American countries • 1970-2005 • 92-93 observations 	<ul style="list-style-type: none"> • FI: FDI outflows to GDP, FDI inflows to GDP • Poverty: share of the poorest quintile in national income or consumption. 	<ul style="list-style-type: none"> • 3-year simple moving average to transform the data • Instrumental-variable estimation to account for endogeneity of GDP per capita and government expenditure. One-period lags used as instruments 	<ul style="list-style-type: none"> • 5 sub-period averages to reduce number of gaps in the data • System GMM regression 	FDI inflows and FDI outflows significant and negative
Arestis and Caner (2010)	<ul style="list-style-type: none"> • 59-67 developing countries • Time frame: 1985-2005 • 121-173 observations 	<ul style="list-style-type: none"> • FI: KAOPEN • Poverty: headcount index at \$2.15/day, poverty gap at \$2.15/day, income share of the poorest 20% of the population 	<ul style="list-style-type: none"> • 5 sub-period averages to reduce number of gaps in the data • System GMM regression 	KAOPEN significant for poverty gap and income share of the poorest 20%, but weakly significant for headcount index. It is positive for headcount ratio and poverty gap, negative for income share of the poorest 20%.	

2.3. Empirical model and data description

This study aims to answer two questions that are not yet addressed in the empirical literature. First, it assesses whether *de jure* and *de facto* financial integration affect poverty differently. Second, the potentially different impact of various types of *de facto* financial integration is also examined. To tackle these two research questions, the following dynamic panel regression model is adapted in this study:

$$P_{i,t} = \beta_0 P_{i,t-1} + \beta_1 DJFI_{i,t} + \beta_2 DFFI_{i,t} + \beta_3 CV_{i,t} + \varepsilon_{i,t} \quad (1)$$

where i stands for country and t stands for period, P is poverty rate, $DJFI$ is *de jure* financial integration variable, $DFFI$ is a vector of *de facto* financial integration variables, CV is a vector of various control variables, and ε is an error term. The error term consists of two components:

$$\varepsilon_{i,t} = \mu_i + v_{i,t} \quad (2)$$

Where μ_i is fixed effect and $v_{i,t}$ are idiosyncratic shocks.

Unlike previous researchers, we have decided to limit our dataset to the most recent years available when writing this paper, 2004-2011, in order to ensure high data quality. Furthermore, only developing countries with at least 4-years-worth of poverty data have been selected, giving us 32 countries (see Appendix A for the full list of countries).

It is widely recognized that poverty is a multidimensional phenomenon and therefore it should be advisable to use a multidimensional approach, such as capability approach³⁶, to measure poverty in the empirical analysis. However, from the perspective of possible FI-poverty relationship, the monetary approach, which is based on the assumption that the monetary metrics capture the nature of deprivation or at least proxy for all other deprivations (Ruggeri Landechi et al., 2003), seems to be the most suitable. It is clear that financial integration, being a free movement of capital across borders, deals with the financial aspect of life, which relates it to the monetary dimension of poverty. The links between FI and other poverty dimensions, such as education or health, are rather unclear or very indirect, making it difficult to justify the use of multidimensional approach in the FI-poverty analysis.

³⁶ According to the capability concept, poverty occurs when an individual fails to achieve basic capabilities, that is he/she lacks “the ability to satisfy certain crucially important functionings up to certain minimally adequate levels” (Sen, 1993, p. 41). The capability approach, therefore, emphasises the importance of individual’s freedom to choose and achieve the most desirable outcomes, called “functionings”, which characterize the quality of life.

Both absolute and relative poverty measures, which identify the poor by setting up a poverty line, are used in this study. The most popular absolute poverty measure, poverty headcount ratio, has poverty lines fixed at \$1.25/day and \$2/day, and ignores the mean income of population. To account for poverty depth, we also use poverty gap at \$1.25/day and \$2/day. For each poverty line, the poverty gap is measured as the mean shortfall from the poverty line. The poverty lines of the relative measure, income share of the poor, are set at the lowest 10% and 20% of population. The variables definitions and sources are provided in Table 2.

Similarly to Arestis and Caner's (2010) approach, we recognize that poverty is dynamic in nature by including lagged poverty among explanatory variables. This is an attempt to capture the persistence of poverty which can be related to the concept of chronic poverty, defined as a suffering of the poor from persistent deprivation (McKay and Lawson, 2003). The key features of chronic poverty are its extended duration, being much of one's life course, and its ability to be passed on to subsequent generations (Hulme and Shepherd, 2003). There are three main causes of chronic poverty mentioned in the development literature. First, the poor do not have access to financial resources needed to invest in human capital, which has been proved in the literature to reduce poverty (McKay and Lawson, 2003). Second, the poor often opt for a strategy of high fertility to ensure that at least some children will survive to take care of their parents in their old age. While an additional child becomes a form of retirement investment, the increased household size reduces per capita income and family welfare (Thorbecke, 2013). Third, poor households are often located in remote rural areas scarce of arable lands and far away from major cities and coast. The latter causes high transaction costs of trade and migration, making it more difficult to escape poverty.

As a word of caution, we study a yearly change in poverty rates over a period of 8 years and hence, the time frame might not be sufficiently long to provide an evidence of chronic poverty. Moreover, chronic poverty is defined at the individual or group level, meaning that the same group is poor from one period to another. Since it is not possible for us to follow the same groups over the examined period, we cannot provide a strong evidence of chronic poverty, we can merely present evidence of persistent poverty, captured through poverty rate the country-level. Overall, by including the lagged dependent variable in the model, the persistent nature of poverty is captured to some extent.

As a measure of *de jure* financial integration, we have selected KAOPEN, constructed by Chinn and Ito (2008). Among the existing measures, it offers the widest country and time coverage, and is available for all countries and years in scope of this study. KAOPEN has been criticized for failing to measure capital account openness in a narrow

Table 2. Main variables description and sources.

Variable	Definition	Source & version
Poverty headcount ratio (PPP) (% of population)	Poverty headcount ratio is the percentage of the population living on less than a poverty line, which is set at \$1.25/day or £2/day, at 2005 international prices.	World Development Indicators (World Bank), September 2015
Poverty gap (PPP) (% of poverty line)	Poverty gap is the mean shortfall from the poverty line (counting the non-poor as having zero shortfall), expressed as a percentage of poverty line, which is set at \$1.25/day or \$2/day.	World Development Indicators (World Bank), September 2015
Income share of the poor	Percentage share of income or consumption that accrues to subgroups of population (in case of this study, the lowest 10% and 20% of population)	World Development Indicators (World Bank), September 2015
KAOPEN	KAOPEN is a composite measure using 4 binary measures of government restrictions reported in IMF's <i>Annual Report on Exchange Rate Arrangements and Exchange Restrictions</i> (AREAER): the openness of a country's capital account, the openness of the current account, the stringency of requirements for the repatriation and/or surrender of export proceeds, and the existence of multiple exchange rates for capital account transactions.	Chinn and Ito, 2013
FDI (% of GDP)	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. FDI inflows show net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors. FDI outflows show net outflows of investment from the reporting economy to the rest of the world.	World Development Indicators (World Bank), September 2015
Portfolio investment (% of GDP)	Portfolio investment covers transactions in equity securities and debt securities.	World Development Indicators (World Bank), September 2015
Loans from non-resident banks (amount outstanding, % of GDP)	Loans from non-resident banks to GDP is the ratio of a country's loans of Bank for International Settlements (BIS) reporting banks to the country's economic activity. THE BIS reporting banks reside in: Australia, Austria, the Bahamas, Bahrain, Bermuda, Brazil, Cayman Islands, Chile, Denmark, Finland, Greece, Guernsey, Hong Kong, India, Ireland, Isle of Man, Jersey, Korea, Luxembourg, Macao, Malaysia, Mexico, the Netherlands Antilles, Norway, Panama, Portugal, Singapore, Spain, Taiwan, and Turkey.	Financial Development and Structure Database (World Bank), November 2013
FDI assets and liabilities (% of GDP)	The FDI category includes controlling stakes in acquired foreign firms (at least 10% of an entity's equity—in practice, however, most FDI holdings reflect majority control), as well as greenfield investments.	Lane and Milesi-Ferretti (2007), February 2015
Portfolio equity assets and liabilities (% of GDP)	Portfolio equity holdings measure ownership of shares of companies and mutual funds below the 10% threshold.	Lane and Milesi-Ferretti (2007), February 2015
Portfolio debt assets and liabilities (% of GDP)	Portfolio debt holdings measure ownership of debt securities which lasts for a period of more than 1 year.	Lane and Milesi-Ferretti (2007), February 2015
Debt assets and liabilities (% of GDP)	Debt category includes portfolio debt securities, plus bank loans and deposits and other debt instruments.	Lane and Milesi-Ferretti (2007), February 2015
Remittance inflows	A sum of 3 items defined in the IMF's Balance of Payments Manual, 5th edition: workers' remittances, compensation of employees, and migrants' transfers. Remittances are current private transfers from migrant workers resident in the host country for more than a year to recipients in their country of origin. Compensation of employees is the income of migrants who have lived in the host country for less than a year. Migrants' transfers are the net worth of migrants who are expected to remain in the host country for more than one year that is transferred from one country to another at the time of migration	Global Financial Development Database (World Bank), June 2016

sense as three out of four of their underlying indicators (see Table 2) are not directly related to capital account transactions. As explained by the authors themselves, this is not a substantial issue as the intensity of capital controls is correlated with the existence of other restrictions on international transactions.

Furthermore, to examine how well KAOPEN reflects the capital account openness, we have compared it with another *de jure* measure, KA, initially developed by Schindler (2009) and later expanded by Fernandez et al. (2015). The KA index is created based on 6 AREAER categories, which are strictly related to capital account restrictions. However, it does not offer as broad a country coverage as KAOPEN, and is available for only 23 countries in scope with this paper. The comparison revealed that for our group of countries and time period, KAOPEN is highly and negatively correlated with KA (-78.93%)³⁷. On this basis, we strongly believe that KAOPEN is a good measure of *de jure* financial integration.

As discussed in Chapter 1, Section 1.8.2, we expect *de jure* financial integration to have a strong disciplining role in the economy, which is independent of the degree of *de facto* financial integration. This is, relaxing capital account restrictions might motivate domestic banks to allocate their capital to soft-information borrowers, including the poor. Norback et al. (2014) also show that financial openness encourages government to lower entry fee for entrepreneurs, which in turn may benefit the poor. As a result, our first hypotheses are formulated as following:

H1. *De jure* financial integration reduces poverty incidence and depth.

H2. *De jure* financial integration increases income share of the poorest.

As expressed earlier, one of the objectives of this study is also to examine how different types of *de facto* financial integration affect poverty. Hence, three types of private capital flows are considered: FDI, portfolio investment, and cross-border bank lending. Furthermore, as shown in Tsai and Huang (2007) and Huang et al. (2010), capital *outflows* are an equally important aspect of financial integration as capital *inflows* because it indicates the ability of domestic residents to invest abroad. While capital inflows measure net purchases or sales by non-residents of domestic assets, capital outflows denote net purchases or sales of foreign assets by residents. As a result, we have looked for both inflows and outflows data. Unfortunately, these data could be found

³⁷ KAOPEN and KA are scaled in the opposite direction. KA ranges from 0 to 1, with 1 denoting the presence of restrictions in all asset classes. KAOPEN, on the other hand, has a mean of 0 and takes on higher values the more open the country is to cross-border capital transactions.

for FDI only. When FDI inflows is available for all our countries and years, outflows cover 31 countries and 5-7 years in the examined period.

As suggested in the financial integration literature, FDI inflows is more likely to have positive effect on a recipient economy. This is attributed to the fact that FDI displays little reversibility and thus, it rarely causes financial crises. Furthermore, FDI into financial sector (i.e. foreign bank entry) not only bring more capital, but it can also improve the efficiency of this sector by, for example, introducing foreign management and accounting practices, benefiting soft-information borrowers, including low-income individuals. FDI into non-financial sector can also reduce poverty by creating new jobs or facilitating entrepreneurial entry through vertical spillovers (see Chapter 1, Section 1.8.1, for more details).

However, FDI can negatively affect the poor due to cream-skimming practices of foreign banks (i.e. allocating capital only to hard-information borrowers, such as established firms and wealthy individuals). Multinational Enterprises in non-financial sector may also hurt the poor if they decide to restructure newly acquired domestic firms and make unskilled workers redundant. Hence, the following hypotheses can be developed:

H3a. FDI inflows reduce poverty incidence and depth.

H3b. FDI inflows increase poverty incidence and depth.

H4a. FDI inflows increase income share of the poorest.

H4b. FDI inflows decrease income share of the poorest.

FDI outflows, caused by residents' purchases of foreign assets, can be associated with a flight of unskilled jobs overseas. This is, FDI abroad might lead to an outsourcing of low-skilled jobs, causing a reduction of these types of employment in the home country and consequently, a higher poverty rate. In such case, poverty rate should increase, leading to the following hypothesis:

H5. FDI outflows increase poverty incidence and depth.

H6. FDI outflows decrease income share of the poorest.

The second type of *de facto* financial integration considered in this paper is portfolio investment, which consists of portfolio equity and portfolio debt flows. It has been decided not to analyse portfolio equity and debt flows separately as there is an inconsistency in the data available. While the World Bank reports portfolio equity *inflows*, it provides only portfolio debt *net flows*. Moreover, when the former is available for all countries and years of relevance to this study, the latter is reported for 25 countries only.

On the contrary, portfolio investment net flows data is provided for all 32 countries and 7 years, with the exception of Paraguay where only 1 year is available.

Portfolio investment inflows are associated with increased capital availability, which encourages domestic financial system sophistication and depth, potentially benefiting the poor. However, this type of flows is easily reversible, and its' sudden reversal can cause financial crisis in a dependent economy. Thus, two relevant hypotheses emerge as follows:

H7a. Portfolio investment net flows reduce poverty incidence and depth.

H7b. Portfolio investment net flows increase poverty incidence and depth.

H8a. Portfolio investment net flows increase income share of the poorest.

H8b. Portfolio investment net flows decrease income share of the poorest.

When looking for a proxy for cross-country bank lending, we have turned to the World Bank's Financial Development and Structure Database. It reports two relevant measures: net flows and amount outstanding of loans from non-resident banks. We decided to use the latter as it offers the full country and time coverage in scope of this study, while the net flows data is only available for 23 countries and from 2 to 8 years (122 observations). However, this measure is not ideal as it covers only loans from non-resident banks that report to the Bank for International Settlements (BIS). These banks reside in 30 countries listed in Table 2. Hence, this measure does not account for banks residing in the biggest financial centres, such as the USA, the UK and Japan. Needless to say, the omitted banks might have a substantial financial resource for issuing international loans. Another issue with this measure is that it does not show capital flows, but the amount owing to foreign banks. These drawbacks should be accounted for when interpreting the estimation results.

Similarly to portfolio investment flows, loans from non-resident banks increase the availability of capital, boosting financial development and potentially benefiting the poor. This type of flows is also easily reversible, making it one of the main triggers of financial crises. In fact, it is considered to be the least favourable type of capital flows, which caused the Asian financial crisis in the late 1990s (see Chapter 1, Section 1.9). As a result, the following hypotheses can be developed:

H9a. Loans from non-resident banks reduce poverty incidence and depth as their positive effects outweigh negative effects.

H9b. Loans from non-resident banks increase poverty incidence and depth.

H10a. Loans from non-resident banks increase income share of the poorest.

H10b. Loans from non-resident banks decrease income share of the poorest.

Given the arguments in favour of capital stock data provided in Chapter 1, Section 1.3.2, we also use foreign assets and liabilities data from the updated and extended version of dataset constructed by Lane and Milesi-Ferretti (2007), which offers the full country and time coverage in scope of this study. Foreign assets reflect residents' purchase or sale of securities abroad, while liabilities indicate foreigners' purchase or sale of securities in the country. Similarly to flows data, stock is also decomposed according to different asset classes: FDI stock, portfolio equity stock, portfolio debt stock. Lane and Milesi-Ferretti (2007) do not provide a separate stock data for cross-border bank loans, however, the latter are included in the debt stock data, together with portfolio debt and other debt instruments. Hence, this measure is used in the regressions interchangeably with portfolio debt assets and liabilities. However, it needs to be pointed out that Milesi-Ferretti (2007) construct their bank loans data based on, *inter alia*, the BIS's dataset. As a result, to some extent their measure shares the same drawbacks as the amount of outstanding loans from non-resident banks variable described above.

On top of the flows and stock of asset categories described above, we also consider the effect of remittance inflows on poverty rates. Although remittances are associated with migration, not financial integration, in the literature, they are an important component of international financial flows, especially in developing countries (e.g. Shapiro & Mandelman, 2016; Yang, 2008). Remittances have two main effects in the recipient countries: income smoothing and start-up financing. As remittances are countercyclical, they can smooth income of household with migrant members in the "bad" times (i.e. recession or unfavourable environmental factors) (e.g. Amuedo-Dorantes and Pozo, 2011; Yang and Choi, 2007). Migrant households have also been found to be more likely to start a new business (e.g. Yang, 2008). Both effects of remittances should benefit low-income individuals, leading to the following hypothesis:

H11. Remittance inflows reduce poverty incidence and depth.

H12. Remittance inflows increase income share of the poorest.

As a word of caution, the remittance inflows data used in this paper does not cover unrecorded remittances (i.e. those sent via non-bank institutions and informal channels). As estimated by Aggarwal et al. (2011), such unrecorded remittances range from 50% to 250% of official statistics. As poorer migrant households are more likely to use informal channels to receive remittances, there is a high likelihood that the official remittance inflows may appear not to affect the poverty rates.

Having discussed the choice of poverty and financial integration measures, we now move on to selecting relevant control variables. The controls used in the empirical papers covered in the Literature Review in Section 2.3 are presented in Appendix B. As can be seen, there is no uniform set of control variables and their number ranges from 3 to 7. Given the lack of a clear theoretical guidance and the relatively small sample size, we construct a set of the most commonly used control variables and include in our regressions, summarized in Appendix C and described in more details below.

Following Agenor (2004), we account for both economic development and growth. GDP per capita at PPP is used as a proxy for the former. It is generally expected that higher economic development should lower poverty rate. Economic growth is measured by GDP per capita annual growth, which is also a proxy for the rate of return on physical investment or a measure of cyclical movements in output. The impact of growth on poverty is explained by the broad-based growth and pro-poor growth approaches described in the theoretical framework in Chapter 1, Section 1.9. As a word of caution, both economic development and economic growth can be affected by poverty rate. Hence, there exist a simultaneity issue, explained in detail in Section 2.5.

Intuitively, inflation should hurt the poor relatively more than the rich as the latter have better access to financial instruments that hedge against inflation, while the poor mainly hold cash in their portfolios (Easterly and Fischer, 2001). In other words, inflation can reduce disposable income of the poor. Moreover, if nominal wages increase less than the price of goods consumed by wage earners, their real income will decline, leading to a higher number of the poor (Cardoso, 1992). However, there is no such clear indication in the existing empirical literature. For example, Cardoso (1992) finds that inflation does not affect those below the poverty line in Latin America as they have negligible cash holdings. On the other hand, Romer and Romer (1998) show that over the short-run, an increase in unanticipated inflation causes a decrease in unemployment, which may benefit the poor. This effect could be reversed in the long-run as higher inflation cannot permanently reduce unemployment. Finally, a positive relation between inflation and poverty rates is found by Agenor (1998) and Easterly and Fischer (2001).

Trade openness, another dimension of globalization, and its impact on poverty have been a subject of intensive debate in the development economics literature. Both theoretical and empirical studies have shown that it can affect the poor in both directions. Winters (2002) developed a theoretical framework to capture the complexity of the trade-poverty relationship in developing countries. Among the links through which trade openness affects poverty are the following: price changes, market creation/destruction, and economic growth. Trade openness can benefit the poor when it is accompanied by

an increase in the price of something that poor households are a net seller (labour, goods, and services). Similarly, if trade openness causes a decrease in prices, the real income of the poor will also fall. Trade reforms may also both create or destroy markets. In case of the former, markets are created for formerly untraded goods, which can lead to poverty reduction. The destruction of a market, on the other hand, can harm the poor. Finally, there is a general consensus that trade openness stimulates long-run growth. However, as mentioned earlier, growth does not always benefit the poor.

In light of the existing debate around inequality and its role as a filter between growth and poverty (e.g. Thorbecke, 2013), and following Arestis and Caner (2010), we also include GINI index in our regression. It is expected that inequality increases poverty rate.

We also control for the quality of institutions. The existing literature has highlighted the protection of property rights to be one of the main drivers behind poverty reduction. De Soto (2000), for instance, argues that the lack of adequate property rights protection and the formal system, which allows to register and make legally enforceable transactions on property rights, in the Third World and post-communist countries were the main cause of a failure of capitalism in these countries. Despite the adoption of other Western invention and possessing things, people in these countries were unable to produce sufficient capital. Besley and Burgess (2003) support this view by finding that an average increase in property rights protection by half of standard deviation is sufficient to halve global poverty. Following Acemoglu and Johnson (2005), we use Polity IV's constraints on the executive measure as a proxy for property rights institutions.

Intuitively, better institutions should lead to lower poverty. However, Chong and Calderon (2000) point out that the poor have to bear high transaction costs related to institutional reform, which in turn leads to higher poverty; the reforms require the poor, often uneducated, to adapt to new mechanisms to survive. Failing to do so will push them further into poverty.

Finally, unlike the previous studies, we also control for financial development. To capture the overall size of the financial sector, we use domestic credit to private sector (as a share of GDP). The limited literature on the topic suggests that financial sector development reduces poverty in low-income countries (e.g. Jalilian and Kirkpatrick, 2002; Uddin et al., 2014).

2.4. Preliminary analysis

Descriptive statistics for the main variables are presented in Table 3. Among the poverty measures, income shares seem to be more stable than the poverty ratio and poverty gap variables. Looking at *de facto* financial integration variables, it is not surprising to see

that FDI inflows are much higher than the other types of capital flows. The corresponding stock data also indicate that FDI liabilities are significantly higher than other investment types. However, the large volume of debt assets and liabilities, as well as amount of outstanding loans from non-resident banks, is an indication that cross-border bank deposits and loans also play a significant role in developing countries.

To get an impression of the unconditional relationship between *de jure* and *de facto* financial integration, the averages of the relevant measures are graphed in Figures 2 and 3. As can be seen in Figure 2, KAOPEN is increasing until 2008, after which it steadily decreases, reaching the 2004-level in 2011. Both FDI inflows and outflows, however, have only a 2-year decline between 2007 and -2009. These declines are clearly a countries' reaction to the global financial crisis in 2007-2008. Portfolio investment flows and banking loans have completely different movements than FDI flows and KAOPEN, while remittance inflows seem to have a constant rate in the examined period (around 5% of GDP). Therefore, the first observation of these data suggests that *de jure* financial openness is not necessarily associated with *de facto* financial integration, which is in line with our predictions in Section 2.2. Furthermore, different types of capital flows also exhibit different movement patterns, indicating that the composition hypothesis might be correct.

Table 3. Descriptive statistics of the main variables.

Variable	Observations	Mean	Standard Deviation	Min	Max
Headcount ratio at \$2/day	215	15.04	14.85	0	64.43
Headcount ratio at \$1.25/day	215	6.02	6.83	0	32.77
Poverty gap at \$2/day	215	5.12	5.28	0	23.64
Poverty gap at \$1.25/day	215	1.95	2.29	0	13.02
Income share of the lowest 20%	213	5.72	2.21	1.87	10.21
Income share of the lowest 10%	213	2.20	1.07	0.45	4.42
KAOPEN	256	0.80	1.38	-1.89	2.39
FDI inflows	256	4.95	3.88	-2.50	31.80
FDI outflows	212	0.66	0.98	-2.29	4.26
Portfolio investment flows	218	-0.34	2.15	-8.61	7.03
Offshore loans (amount outstanding)	256	19.73	54.20	0.34	355.64
FDI assets	256	2.96	4.28	-2.25	28.48
FDI liabilities	256	34.09	16.91	6.17	100.70
Portfolio equity assets	256	1.02	1.77	-0.71	10.38
Portfolio equity liabilities	256	3.82	5.58	0	28.75
Portfolio debt assets	247	4.03	6.97	0	36.79
Portfolio debt liabilities	247	6.63	7.87	0	40.22
Debt assets	256	23.43	21.89	3.52	115.40
Debt liabilities	256	48.72	30.38	8.78	194.51
Remittance inflows	256	5.37	6.77	0.09	34.5

Figure 2. KAOPEN and capital flows.

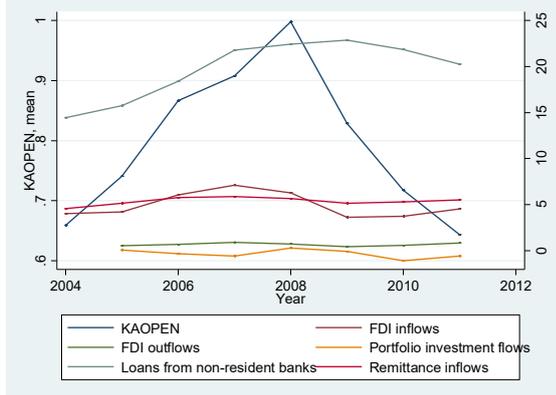
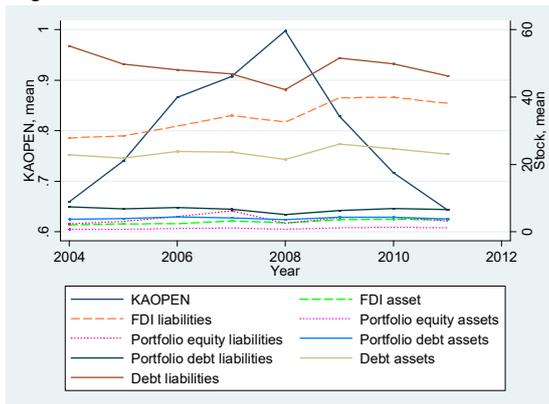


Figure 3. KAOPEN and stock data.



The capital stock measures plotted in Figure 3 confirm that *de facto* financial integration measures behave differently from *de jure* measure. Interestingly, they also have a different pattern compared to capital flows in Figure 1. While all the stock measures have a significant decline in 2008, followed by the immediate rise in 2009, capital flows experienced a 2-year decline. Moreover, stock measures seem to show a downward trend at the end of the period covered in this study, compared to the steady increase of capital flows. As a result, foreign stock might affect poverty differently than capital flows.

In an attempt to gauge a sense of the basic relationship between different financial integration and poverty variables, simplified graphs with yearly averages have been created in Figures 4-8. It seems that, for most of the time, poverty headcount ratio and poverty gap measures move in the opposite direction to KAOPEN (Figure 4). The exception is the financial crisis period 2007-2009, when all variables seem to move in the same direction. This might be an indication that higher financial openness could be associated with lower poverty in the “quiet” times, but at the same time it may have been detrimental to them during the global crisis. While the income shares of the poor increase slightly together with KAOPEN until 2008, it is not possible to spot such clear co-movements in the later years (Figure 5).

Figure 4. KAOPEN, poverty headcount ratio and poverty gap.

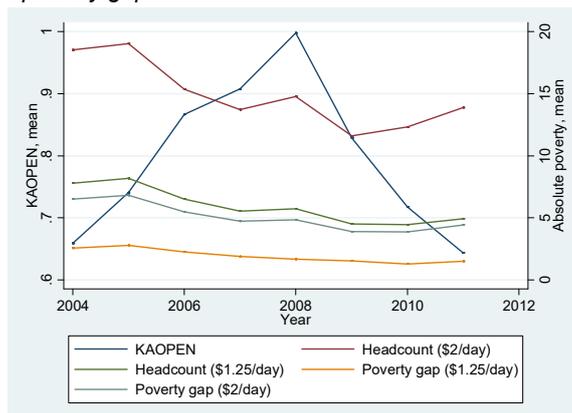


Figure 5. KAOPEN and income share of the poor.

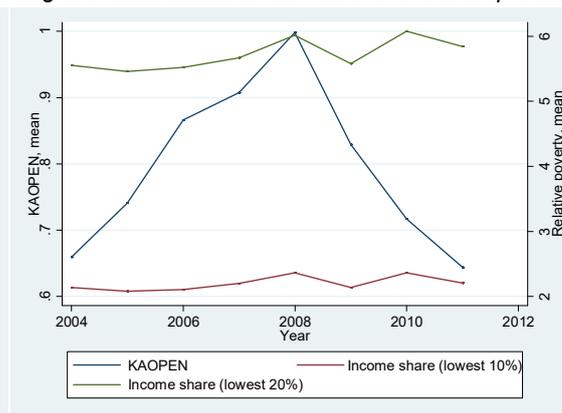


Figure 6 shows that up until 2008, poverty headcount ratio and poverty gap move in the opposite direction to FDI flows, but after that date they all move in the same direction. There are no obvious co-movement patterns between FDI flows and the relative poverty measures, income shares of the poor (Figure 7), nor between the remaining capital flows and poverty variables (Figure 8 and Figure 9). Appendix D also do not indicate any clear relationship between capital stock variables and poverty. However, there are a lot of sharp changes around the global financial crisis in 2007-2008, which seem to be consistent with the theoretical expectations. In essence, in the event of global financial crisis, financial integration leads to a quick transmission of financial shocks across borders, which has a detrimental effect on domestic economy and the poor. Hence, as there is one global financial crisis covered in our time period, we might find a negative impact of *de facto* financial integration on poverty.

In Table 4 we also report an extract of the correlation matrix to further explore the potential relationship between financial integration and poverty. Clearly, correlation is not an indication of causation, but it allows to see if there are potentially different effects of various types of financial integration measures on poverty rates. Indeed, KAOPEN appears to be negatively correlated to some of *de facto* measures, such as portfolio investment flows and FDI liabilities. Even among *de facto* measures there seem to be some inconsistencies. For example, when FDI inflows have positive correlation with income shares of the poor, loans from non-resident banks have a negative correlation with the same poverty measure.

In conclusion, the preliminary analysis indicates that there is a good justification to include different types of financial integration measures into our analysis to have a more comprehensive picture of their effect on poverty reduction.

Figure 6. FDI flows, remittance inflows, poverty headcount and poverty gap.

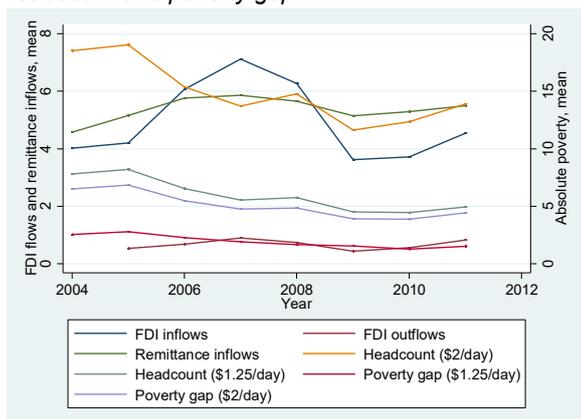


Figure 7. FDI flows, remittance inflows and income share of the poor.

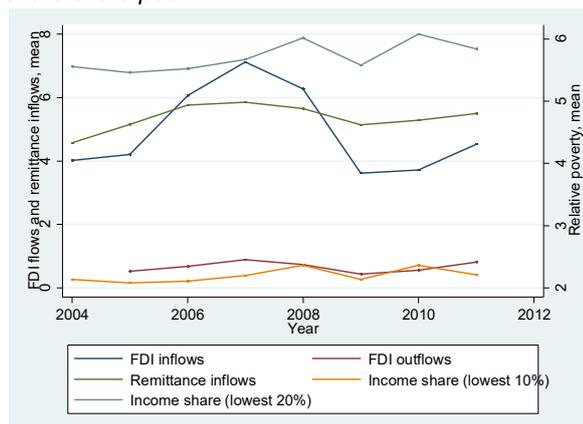


Figure 8. Portfolio investment flows, bank loans, poverty headcount ratio and poverty gap.

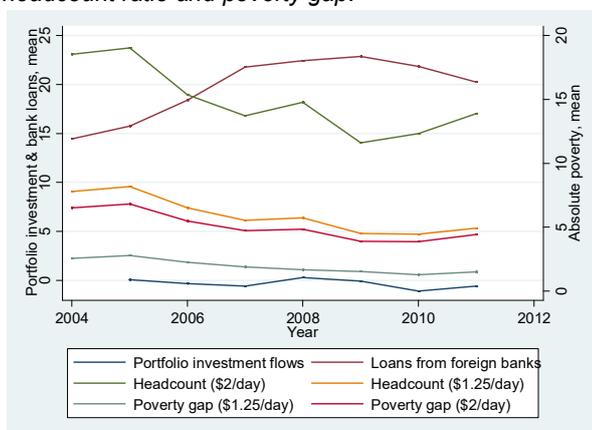


Figure 9. Portfolio investment flows, bank loans and income share of the poor.

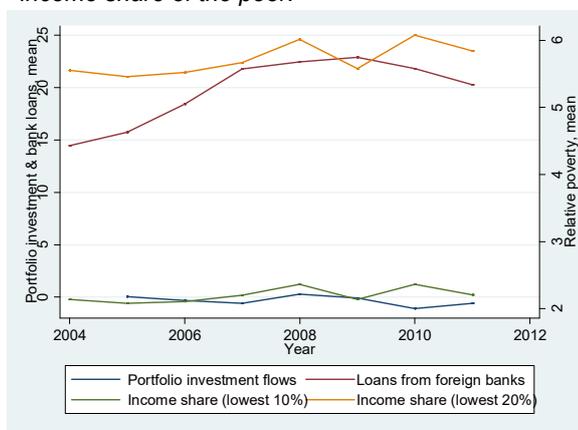


Table 4. An extract of correlation matrix for main variables.

	Headcount ratio (\$2/day)	Headcount ratio (\$1.25/day)	Poverty gap (\$2/day)	Poverty gap (\$1.25/day)	Income share of the lowest 20%	Income share of the lowest 10%
KAOPEN	-0.0856	-0.1150*	-0.0993	-0.0720	-0.2871***	-0.3053***
FDI inflows	0.0173	-0.0066	-0.0038	-0.0312	0.1889***	0.1736**
FDI outflows	-0.1378*	-0.1043	-0.1213	-0.0907	0.0197	0.0087
Portfolio invest. flows	0.0046	0.0262	0.0278	0.0731	0.0348	0.0237
Offshore bank lending	-0.0978	-0.0517	-0.0681	-0.0242	-0.2144***	-0.2107***
FDI assets	-0.0869	-0.0599	-0.0742	-0.0611	-0.0430	-0.0407
FDI liabilities	0.0401	0.1099	0.0935	0.1752**	-0.0727	-0.0896
Portfolio equity assets	-0.0562	-0.0482	-0.0625	-0.0855	-0.0535	-0.0550
Portfolio equity liabilities	-0.1102	-0.1034	-0.1130*	-0.1168*	-0.1481**	-0.1342*
Portfolio debt assets	-0.1531**	-0.0840	-0.1041	-0.0172	-0.2334***	-0.2291***
Portfolio debt liabilities	-0.2623***	-0.2027***	-0.2279***	-0.1562**	-0.3022***	-0.2925***
Debt assets	-0.1822***	-0.1324*	-0.1545**	-0.0995	-0.1049	-0.0973
Debt liabilities	-0.0885	-0.0752	-0.0788	-0.0494	-0.0256	-0.0389
Remittance inflows	0.2165***	0.1643**	0.1968***	0.1841***	0.0501	0.0496

Note: Asterisks show level of significance at: *10%, **5%, ***1%.

2.5. Estimation strategy and endogeneity discussion

As explained in Section 2.3, this study adapts a dynamic panel data model shown in Equation (1), which is characterized by the presence of a lagged dependent variable among the regressors. The main problem created by the introduction of the lagged dependent variable is its correlation with the error term, which contains individual effects and idiosyncratic shocks (Equation 2). As a result, Ordinary Least Squares (OLS) estimator would be biased and inconsistent. In case of the fixed effect (FE) estimator, although the individual effects component of the error term is wiped out, the correlation issue still persists. Thus, for large N and small T, which is a case in this study, the FE estimator is still inconsistent (Baltagi, 2013). On the other hand, the Instrumental Variables (IV) method developed by Anderson and Hsiao (1982), which wipes out the fixed effects through first-difference transformation and introduces lagged differences or levels as instruments, leads to consistent, but inefficient estimates of the parameters (Ahn and Schmidt, 1995).

Given the drawbacks of the estimation methods above, this study follows a Generalized Method of Moments (GMM) procedure, which provides consistent and more efficient estimates. It addresses two important modelling concerns, namely fixed effects and endogeneity. The fixed effect is wiped out through data transformation, while the endogenous variables are instrumented with “internal” instruments, i.e. lagged regressors and their differences. The flexible GMM framework also allows to accommodate unbalanced panels (Roodman, 2009a). All these characteristics make it a suitable methodology for this study.

One of the main advantages of GMM is that it allows for the inclusion of endogenous and predetermined but not strictly exogenous regressors in the model. As mentioned in Section 2.2, the existing literature indicates that GDP per capita and growth should be treated as endogenous variables. The channels through which poverty can dampen growth have been identified in Perry et al. (2006). For example, poor people often suffer from poor health, which in turn affects their productivity. Additionally, poverty, especially in the form of income disparities, can exacerbate ethnic and racial tensions and conflicts, which in turn can hamper economic development and growth.

One may be concerned that countries with high poverty rates are more willing to experiment with opening their capital account. However, since there is no strong theoretical nor empirical evidence for such reverse causality, KAOPEN is treated as predetermined but not strictly exogenous, instead of endogenous, variable in this study.

Intuitively, countries with high poverty rates could be main recipients of international remittances, which smooth income and alleviate capital constraints of the poor. Hence, remittance inflows are treated as endogenous variable in this study.

There is also a possible simultaneity problem between poverty and institutions. As Mauro (1998) pointed out, poorer countries are usually considered to be more corrupt, which might be caused by the fact that they cannot devote sufficient resources to setting up and enforcing an effective legal framework. In addition, poor people might be more likely to abandon their moral principles and accept bribes. However, similarly to *de jure* financial integration, there is no solid theoretical or empirical evidence for poverty-institutions causality. Hence, the executive constraint is also treated as predetermined but not strictly exogenous variable.

There are two types of GMM procedures: difference GMM and system GMM. Difference GMM was developed by Arellano and Bond (1991) and, similarly to IV method, initially involved wiping out fixed effects through the first-difference transformation. It also uses lagged levels as instruments. As noted by Arestis and Caner (2010), first-difference transformation leads to a loss of the cross-country dimension of the data and if the regressors are persistent over time, their lagged values are weak instruments for the regression in differences. Additionally, Blundell and Bond (1998) demonstrate that if a dependent variable is close to a random walk, then difference GMM is inefficient because past levels contain little information about future changes. In other words, untransformed lags are weak instruments for transformed variables (Roodman, 2009b). To overcome this issue, Blundell and Bond (1998) suggest to instrument levels with differences because in the case of random walk variables, past changes might be more predictive of current levels than past levels are of current changes. They thus proposed a system estimator, which involves building a stacked dataset with both levels and transformed observations and using both lagged levels and lagged transformed variables as instruments. This method is now called system GMM.

To determine whether our dependent variables follow a random walk, we perform one of the first generation panel unit root tests (PURT), Harris-Tzavalis, on the poverty variables. However, first generation PURTs are based on the assumption that a panel is heterogeneous, which is unrealistic in our case. Hence, a second generation PURT, Pesaran, is also conducted. Both of the tests can only be run for panels with no missing observations and thus, only 17 out of 32 panels could be included. The results presented in Table 5 indicate that we cannot reject the possibility of non-stationarity in some instances. Hence, given the drawbacks of difference GMM described above and the results of the unit root tests, we opt for system GMM in our analysis.

Table 5. Harris-Tzavalis and Pesaran unit root test results.

Variable	Harris-Tzavalis		Pesaran	
	p-value	Verdict	p-value	Verdict
Headcount ratio at \$2/day	0.088	Non-stationary	0.025	Stationary
Headcount ratio at \$1.25/day	0.014	Stationary	0.040	Stationary
Poverty gap at \$2/day	0.074	Non-stationary	0.014	Stationary
Poverty gap at \$1.25/day	0.066	Non-stationary	0.011	Stationary
Income share of the lowest 20%	0.000	Stationary	0.917	Non-stationary
Income share of the lowest 10%	0.000	Stationary	0.816	Non-stationary

So far, the first-difference data transformation has been mentioned as a method for eliminating the fixed effect component from the error term. The drawback of this type of transformation is that it magnifies gaps in unbalanced panels. To overcome this issue, Arellano and Bover (1995) came up with another type of data transformation called forward orthogonal deviations. It subtracts the average of all future available observations of a variable, minimizing the data loss. Therefore, mainly due to the missing poverty data in this study, orthogonal deviations is used to eliminate the fixed effect. This is also in line with Arestis and Caner (2010).

According to Roodman (2009b), a two-step GMM estimation is more robust than a one-step GMM in estimating coefficients. However, the standard errors of the former tend to be downward biased in small samples, which is the case of this study. Windmeijer (2005) fixed this problem by developing a correction to the standard errors. Hence, a two-step GMM estimator with Windmeijer finite-sample correction is applied.

There is one problem that often appears when difference and system GMM are used on a small sample: instrument proliferation. Roodman (2009a) points out that numerous instruments can overfit instrumented variables, failing to expunge their exogenous components and biasing coefficient estimates. Furthermore, too many instruments can produce an implausibly perfect Hansen over-identification test p-value of 1.000. When the Hansen test was designed to check the validity of the full instrument set, it is clearly weakened by too many instruments. Unfortunately, there is no clear guidance on selecting an appropriate number of instruments. As a rule of thumb, Roodman (2009a) suggests having no more instruments than the number of individual units in the panel. We reduce the instrument count by limiting the number of lags used as instruments and combining instruments through addition into smaller sets.

The general practice is to use lag 2 and longer as instruments for endogenous variables, and lag 1 and longer for not strictly exogenous ones (Roodman, 2009b). However, the

presence of autocorrelation in the idiosyncratic disturbance term renders some lags invalid as instruments. Thus, Arellano and Bond (1991) develop a test statistic for second-order serial correlation based on residuals from the first-difference equation to check for first-order serial correlation in levels. If the test indicates a serial correlation, then lag 2 of the dependent variable is an invalid instrument and third-order autocorrelation must be checked. Therefore, the Arellano-Bond autocorrelation test is run and reported for all our specifications in the next section to check if the lags used are valid instruments.

Finally, as shown in all graphs in the Preliminary Analysis section, the financial crisis in 2007-2008 affected both *de jure* and *de facto* financial integration measures, which in turn might impact the FI-poverty relationship. To account for this possibility, we include time dummies into our regressions.

Having discussed the econometric method used in this study, we now move on to presenting the estimation results in the next section.

2.6. Estimation results

The System GMM coefficient estimates, using capital flows as *de facto* financial integration measures, are presented in Table 6 to Table 8. The number of countries varies between 28 and 30 (number of observations between 141 and 143), depending on the poverty rate used as dependent variable. The country that is dropped out from all the specifications is Vietnam as it only has poverty data for every other year and hence, it is impossible to use a lagged poverty variable as a regressor in its case.

The Arellano-Bond autocorrelation tests, which are shown in all tables, indicate that there is no second order serial correlation in residuals in all specifications, making it possible to use lag 2 and longer as instruments for the endogenous variables. The Hansen tests also indicate that all the models have valid instruments and, as its p-values do not come close to 1.000 in any of the specifications, there is no problem of too many instruments.

As can be seen in Table 6, the coefficient of KAOPEN is negative and statistically significant at 5% and 1% in all specifications when poverty headcount ratio at \$2/day is used as a dependent variable. It is, however, less significant in specifications with the headcount ratio at \$1.25/day, with a significance level of 10% reported in three specifications. Hence, *de jure* financial integration seems to reduce the number of poor, but its effect on extremely poor is likely to be weaker. These findings are different to those reported by Arestis and Caner (2010), whose results indicate KAOPEN to be positive but insignificant in their headcount ratio regressions. This might be caused by

the fact that Arestis and Caner (2010) use 5-yearly averages to reduce the number of gaps in their data, missing the information provided in the yearly data. Furthermore, the results of KAOPEN might be sample-specific. When Arestis and Caner (2010) dataset contains 57-67 developing countries, our study is limited to 28-30, most of which are Latin American countries.

De facto financial measures, on the other hand, appear to be statistically insignificant for the headcount ratios. The only exception is FDI inflows, which are found to be significant in all specifications when headcount ratio at \$2/day is used. FDI inflows do not appear to affect the number of extremely poor. To some extent, this finding expands on Santarelli and Figini's (2006) as they also report FDI inflows to be insignificant.

KAOPEN also appears to affect poverty gap (Table 7) as it turns out to be negative and statistically significant in most specifications. Looking at the magnitude of coefficients, *de jure* financial integration measure has a stronger effect on poverty gap at \$2/day than at \$1.25/day. Hence, there is strong evidence that KAOPEN reduces poverty incidence and intensity in general, but its effect on extremely poor is less profound. Overall, H1 cannot be rejected.

Among *de facto* financial integration measures, there is evidence that FDI inflows increase poverty gap at \$2/day as they are found to be statistically significant in all but one specification (models (2) – (5)). These results resemble those for headcount ratios and thus, H3b cannot be rejected at any reasonable significance level. It is worth mentioning that, despite being statistically insignificant, remittance inflows consistently have a negative sign, which is in line with our expectations.

The relative poverty measures, income share of the poorest 20% and 10% of population, are not found to be affected by any of the financial integration measures (Table 8). This could be potentially caused by the fact that financial integration has similar effects on the income of both the poor and non-poor. This is, it does not benefit or hurt the poor more than non-poor.

So far, the results using capital flows as *de facto* financial integration measures suggest that *de jure* and *de facto* financial integration affect poverty incidence and depth. Furthermore, they appear to have opposite effects. When KAOPEN is found to reduce absolute poverty rates, FDI inflows appear harmful for the poor.

Table 6. System GMM coefficient estimates. Dependent variables: headcount ratio at \$2/day, headcount ratio at \$1.25/day. *De facto* FI: capital flows.

Variable		Dependent: headcount ratio at \$2/day						Dependent: headcount ratio at \$1.25/day				
		(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)
Independent	Lagged poverty	0.847*** (0.000)	0.823*** (0.000)	0.930*** (0.000)	0.879*** (0.000)	0.770*** (0.000)	0.787*** (0.000)	0.587** (0.016)	0.676*** (0.000)	0.614** (0.035)	0.608*** (0.000)	0.656*** (0.000)
	KAOPEN	-1.512** (0.015)	-1.503*** (0.002)	-1.256** (0.017)	-1.176** (0.027)	-0.904** (0.031)	-1.705** (0.028)	-0.967* (0.080)	-1.367*** (0.000)	-1.258** (0.033)	-1.109* (0.072)	-1.131* (0.055)
	FDI inflows	0.351** (0.018)	0.329** (0.016)	0.272*** (0.007)	0.230* (0.065)	0.215* (0.059)	0.312*** (0.005)	0.132 (0.395)	0.210* (0.100)	0.0589 (0.626)	0.0255 (0.833)	0.0339 (0.792)
	FDI outflows	-0.431 (0.304)	-0.334 (0.519)	-0.267 (0.586)	-0.249 (0.606)	-0.0151 (0.974)	-0.162 (0.698)	0.0205 (0.958)	-0.161 (0.660)	0.181 (0.404)	0.109 (0.672)	0.0497 (0.840)
	Portfolio investment flows	0.103 (0.607)	0.103 (0.542)	0.0675 (0.697)	0.0910 (0.611)	0.186 (0.285)	0.000567 (0.997)	0.0590 (0.629)	0.0402 (0.768)	-0.0501 (0.778)	-0.0466 (0.726)	-0.0418 (0.769)
	Loans from non-resident banks	0.00637 (0.631)	0.00837 (0.208)	0.00432 (0.625)	0.00512 (0.577)	0.00343 (0.646)	0.00306 (0.455)	0.00994 (0.367)	0.00725 (0.134)	0.00812 (0.160)	0.00646 (0.294)	0.00736 (0.140)
	Remittance inflows	-0.156 (0.431)	-0.146 (0.376)	-0.120 (0.419)	-0.177 (0.264)	-0.267 (0.113)	-0.115 (0.653)	-0.0700 (0.731)	-0.109 (0.665)	0.0548 (0.686)	-0.0131 (0.910)	0.0218 (0.834)
Control	GDP per capita	-2.118 (0.516)	-2.736 (0.369)	-1.590 (0.670)	-2.822 (0.453)	-5.392* (0.087)	-3.699 (0.334)	-3.853 (0.257)	-2.332 (0.610)	-2.374 (0.387)	-3.210 (0.131)	-2.190 (0.194)
	GDP growth	-0.162 (0.236)	-0.175 (0.252)	-0.180 (0.304)	-0.169 (0.279)			-0.0690* (0.057)	-0.0848* (0.059)	-0.0505* (0.090)	-0.0628** (0.021)	-0.0550* (0.097)
	Inflation	-0.153 (0.216)	-0.160* (0.083)	-0.157* (0.065)	-0.131* (0.094)	-0.0999 (0.156)	-0.210* (0.056)	-0.0238 (0.730)	-0.0833 (0.230)	-0.107 (0.202)	-0.0773 (0.304)	-0.0973 (0.150)
	Domestic credit to priv. sec.	-0.0403* (0.095)	-0.0461* (0.093)	-0.0237 (0.471)	-0.0203 (0.537)	-0.0119 (0.705)		-0.0116 (0.747)	-0.0326 (0.166)	0.00337 (0.945)	0.0123 (0.719)	
	Executive constraints	0.0102 (0.622)	0.0139 (0.487)	0.0212 (0.442)				-0.00284 (0.817)	0.00571 (0.618)	0.00766 (0.619)		
	GINI	0.0645 (0.453)	0.0583 (0.463)					0.0799 (0.322)	0.0991 (0.115)			
	Trade openness	-0.000471 (0.989)						-0.0153 (0.594)				
Arellano-Bond test for AR(2) in first diff.		0.334	0.332	0.327	0.338	0.416	0.480	0.209	0.223	0.282	0.138	0.180
Hansen test of over-identified restrict.		0.210	0.233	0.360	0.303	0.535	0.396	0.279	0.307	0.313	0.568	0.455
Number of observations		143	143	143	143	143	143	143	143	143	143	143
Number of countries		30	30	30	30	30	30	30	30	30	30	30
Number of instruments		30	29	29	27	25	20	27	30	27	28	28

Notes: p-values are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%. Time dummies are included in all specifications but are not reported.

Table 7. System GMM coefficient estimates. Dependent variables: poverty gap at \$2/day, poverty gap at \$1.25/day. *De facto* FI: capital flows.

Variable		Dependent: poverty gap at \$2/day					Dependent: poverty gap at \$1.25/day				
		(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Independent	Lagged poverty	0.596*** (0.004)	0.712*** (0.000)	0.631*** (0.001)	0.683*** (0.000)	0.667*** (0.000)	0.460*** (0.002)	0.596*** (0.000)	0.584*** (0.000)	0.572*** (0.000)	0.591*** (0.000)
	KAOPEN	-0.742* (0.057)	-0.999*** (0.000)	-0.788*** (0.002)	-0.632* (0.067)	-1.051*** (0.006)	-0.400* (0.083)	-0.579** (0.017)	-0.556** (0.033)	-0.370 (0.111)	-0.478** (0.044)
	FDI inflows	0.135 (0.208)	0.190*** (0.005)	0.111* (0.088)	0.130** (0.031)	0.130* (0.079)	0.0527 (0.355)	0.0928* (0.089)	0.0604 (0.217)	0.0487 (0.394)	0.0501 (0.368)
	FDI outflows	-0.0702 (0.775)	-0.0840 (0.696)	0.0585 (0.808)	-0.102 (0.600)	-0.0703 (0.739)	-0.0251 (0.865)	-0.102 (0.524)	-0.0446 (0.793)	-0.0402 (0.802)	-0.0573 (0.739)
	Portfolio investment flows	0.0466 (0.608)	0.0192 (0.835)	0.0275 (0.730)	0.00324 (0.965)	-0.0011 (0.990)	0.0418 (0.343)	0.0358 (0.376)	0.0268 (0.455)	0.0400 (0.438)	0.0415 (0.268)
	Loans from non-resident banks	0.00822 (0.157)	0.00369 (0.272)	0.00376 (0.200)	0.000839 (0.695)	0.00251 (0.293)	0.000840 (0.862)	0.00202 (0.357)	0.00140 (0.434)	0.000284 (0.845)	0.000750 (0.591)
	Remittance inflows	-0.0327 (0.761)	-0.0787 (0.477)	-0.101 (0.210)	-0.128 (0.235)	-0.0851 (0.453)	-0.0221 (0.638)	-0.0343 (0.439)	-0.0419 (0.401)	-0.0574 (0.283)	-0.0463 (0.443)
Control	GDP per capita	-2.536 (0.230)	-1.558 (0.431)	-2.942* (0.065)	-2.779* (0.067)	-2.319* (0.076)	-1.184 (0.214)	-0.657 (0.331)	-1.096 (0.206)	-1.403 (0.102)	-1.207 (0.194)
	GDP growth	-0.0526* (0.091)	-0.0446 (0.225)	-0.0552* (0.092)	-0.0272 (0.383)	-0.0320 (0.288)	-0.0273* (0.080)	-0.0326* (0.054)	-0.0331* (0.076)	-0.0211 (0.236)	-0.0187 (0.317)
	Inflation	-0.0281 (0.684)	-0.0729* (0.069)	-0.0469* (0.095)	-0.0226 (0.328)		-0.0134 (0.621)	-0.0276 (0.211)	-0.0295 (0.271)	-0.00575 (0.738)	
	Domestic credit to priv. sec.	-0.0112 (0.580)	-0.0231 (0.108)	-0.0113 (0.475)			-0.00205 (0.837)	-0.0102 (0.267)	-0.0041 (0.681)		
	Executive constraints	-0.0061 (0.444)	-0.0043 (0.568)				-0.00157 (0.697)	0.000274 (0.934)			
	GINI	0.0498 (0.207)	0.0718* (0.076)	0.0585* (0.069)	0.0639* (0.066)	0.0784* (0.073)	0.0715* (0.052)	0.0629** (0.025)	0.0562* (0.070)	0.0609** (0.030)	0.0643** (0.012)
	Trade openness	-0.0152 (0.360)					0.000705 (0.953)				
Arellano-Bond test for AR(2) in first diff.		0.175	0.306	0.214	0.394	0.490	0.230	0.282	0.233	0.248	0.303
Hansen test of over-identified restrict.		0.304	0.395	0.554	0.349	0.229	0.460	0.459	0.576	0.325	0.377
Number of observations		143	143	143	143	143	143	143	143	143	143
Number of countries		30	30	30	30	30	30	30	30	30	30
Number of instruments		29	30	27	28	28	27	30	27	28	28

Notes: p-values are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%. Time dummies are included in all specifications but are not reported.

Table 8. System GMM coefficient estimates. Dependent variable: income share of the lowest 20% and 10% of population. *De facto* FI: capital flows.

Variable		Dependent: income share of the lowest 20%					Dependent: income share of the lowest 10%				
		(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Independent	Lagged poverty	0.984*** (0.000)	0.977*** (0.000)	0.942*** (0.000)	0.951*** (0.000)	0.998*** (0.000)	0.973*** (0.000)	0.921*** (0.000)	0.934*** (0.000)	0.953*** (0.000)	1.011*** (0.000)
	KAOPEN	0.0668 (0.688)	0.0309 (0.817)	0.0217 (0.850)	0.0468 (0.692)	0.00929 (0.947)	0.0333 (0.722)	0.0194 (0.788)	0.0162 (0.837)	0.0265 (0.725)	-0.00051 (0.995)
	FDI inflows	-0.0226 (0.458)	-0.0308 (0.442)	-0.0227 (0.571)	-0.0270 (0.545)	-0.0230 (0.618)	-0.0140 (0.328)	-0.0128 (0.575)	-0.0129 (0.540)	-0.0143 (0.554)	-0.0109 (0.573)
	FDI outflows	-0.0155 (0.803)	-0.0206 (0.732)	-0.0143 (0.814)	0.00101 (0.987)	-0.0330 (0.659)	0.000531 (0.987)	0.00235 (0.941)	-0.00041 (0.990)	0.00594 (0.875)	-0.0267 (0.623)
	Portfolio investment flows	-0.0029 (0.921)	-0.0021 (0.942)	0.00212 (0.950)	0.00138 (0.963)	-0.00143 (0.962)	-0.00295 (0.861)	0.00134 (0.949)	0.000341 (0.987)	-0.00102 (0.952)	-0.00326 (0.838)
	Loans from non-resident banks	-0.00014 (0.958)	0.0003 (0.851)	0.00025 (0.866)	0.00027 (0.844)	0.00054 (0.657)	0.000053 (0.965)	0.00020 (0.779)	0.000220 (0.756)	0.000142 (0.828)	0.000209 (0.673)
	Remittance inflows	-0.0196 (0.708)	-0.0146 (0.779)	-0.00747 (0.904)	-0.00524 (0.937)	0.0257 (0.637)	-0.00720 (0.772)	-0.00687 (0.866)	-0.00371 (0.911)	-0.00312 (0.932)	0.0162 (0.577)
Control	GDP per capita	-0.395 (0.548)	-0.370 (0.585)	-0.272 (0.735)	-0.307 (0.686)	0.101 (0.864)	-0.177 (0.606)	-0.197 (0.679)	-0.143 (0.736)	-0.159 (0.705)	0.159 (0.666)
	GDP growth	0.0323* (0.082)	0.0335*** (0.006)	0.0295** (0.047)	0.0318** (0.011)	0.0310** (0.047)	0.0149 (0.262)	0.0127 (0.217)	0.0131 (0.195)	0.0145* (0.086)	0.0156* (0.066)
	Inflation	0.0126 (0.681)	0.0105 (0.361)	0.0134 (0.198)	0.0154 (0.188)		0.00486 (0.718)	0.00634 (0.256)	0.00626 (0.269)	0.00661 (0.308)	
	Domestic credit to priv. sec.	0.00146 (0.917)	0.00142 (0.872)	-0.0004 (0.967)			-0.00009 (0.991)	-0.0011 (0.861)	-0.0008 (0.883)		
	Executive constraints	-0.0038 (0.573)	-0.0056 (0.384)				-0.00186 (0.611)	-0.00149 (0.555)			
	Trade openness	0.00051 (0.953)					0.000376 (0.941)				
Arellano-Bond test for AR(2) in first diff.		0.642	0.762	0.136	0.091	0.214	0.933	0.920	0.562	0.412	0.594
Hansen test of over-identified restrict.		0.263	0.346	0.178	0.177	0.122	0.232	0.208	0.204	0.210	0.214
Number of observations		141	141	141	141	141	141	141	141	141	141
Number of countries		28	28	28	28	28	28	28	28	28	28
Number of instruments		28	28	27	26	25	28	28	27	26	27

Notes: p-values are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%. GINI index is not included as it is highly correlated with lagged dependent variable (-96.30% with income share of the lowest 20%, and -94.43% with income share of the lowest 10%). Time dummies are included in all specifications but are not reported.

In terms of control variables, there is very weak evidence of GDP per capita reducing headcount ratio and poverty gap at \$2/day (model (5) in Table 6, models (2)-(5) in Table 7). GDP growth, on the other hand, seems to benefit the extremely poor (headcount ratio and poverty gap at \$1.25/day), but the evidence is, again, very weak due to significance level reported at 10% (all specifications in Table 6, and models (1)-(3) in Table 7). Interestingly, there is strong proof that GDP growth increases relative income of the lowest 20% of population (all specifications in Table 8). This could probably be an indication of the rising inequality. GINI coefficient is found to increase poverty gap, with stronger evidence reported for poverty gap at \$1.25/day (Table 7). The remaining control variables do not appear to impact poverty rates.

The results obtained using capital flows as proxy for *de facto* financial integration provide a relatively weak evidence of the financial integration's effect on extreme poverty. However, when capital flows are replaced by capital stocks (Table 9 to Table 11), a stronger evidence of linkages is found. The new results confirm that KAOPEN reduces the number of poor, as measured by the headcount ratio at \$2/day (Table 9). Moreover, even extreme poverty, measured by headcount ratio at \$1.25/day is found to be reduced by KAOPEN as the latter appear to be statistically significant at 5% and 1% in all but one specification (model (2) in Table 9). Similarly, a strong conclusion can be drawn that FDI liabilities increase headcount ratio at both \$2/day and \$1.25/day. While there is no evidence that FDI inflows increase extreme poverty (Table 6), FDI liabilities is found to increase the number of both the poor and the extremely poor. It is now even more apparent that FDI has an opposite effect on poverty than KAOPEN, proving that *de facto* and *de jure* financial integration affect poverty in different ways. Furthermore, looking at the magnitude of coefficients, it can be concluded that both KAOPEN and FDI liabilities have a smaller effect on extremely poor than the poor.

Regarding poverty gap measures, KAOPEN appears to be statistically significant again once we introduce capital stock measures (Table 10), which is in line with our findings when capital flows were employed (Table 7). On the other hand, FDI liabilities turn out to be strongly significant (mostly at 1% significance level) and positive in most specifications with regards to poverty gap at both \$2/day and \$1.25/day. Hence, there is a strong evidence that FDI liabilities increase poverty gap, making the poor fall further from the poverty line.

Income shares of the lowest 20% and 10% of population are not found to be affected by KAOPEN (Table 11), which is consistent with the findings for capital flows reported in Table 8. Unlike FDI inflows' lack of statistical significance reported in Table 8, FDI liabilities appear to reduce income share of both the lowest 20% and 10% of population,

Table 9. System GMM coefficient estimates. Dependent variables: headcount ratio at \$2/day, headcount ratio at \$1.25/day. *De facto* FI: capital stock.

Variable		Dependent: headcount ratio at \$2/day						Dependent: headcount ratio at \$1.25/day					
		(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Independent	Lagged poverty	0.790*** (0.000)	0.787*** (0.000)	0.778*** (0.000)	0.786*** (0.000)	0.747*** (0.000)	0.732*** (0.000)	0.725*** (0.000)	0.680*** (0.000)	0.660*** (0.000)	0.647*** (0.000)	0.650*** (0.000)	0.675*** (0.001)
	KAOPEN	-0.759** (0.023)	-0.742 (0.133)	-0.799** (0.049)	-0.792** (0.038)	-1.095** (0.047)	-1.087* (0.090)	-0.886** (0.021)	-0.548 (0.200)	-0.703** (0.019)	-0.732** (0.049)	-0.722** (0.049)	-0.963*** (0.001)
	Total assets	-0.0382 (0.160)						-0.0253 (0.212)					
	Total liabilities	0.0445* (0.053)						0.0373* (0.076)					
	FDI assets		0.0456 (0.659)	0.0449 (0.641)	0.0586 (0.524)	0.00539 (0.971)	-0.00130 (0.993)		0.0388 (0.734)	0.0263 (0.833)	-0.00488 (0.968)	-0.00977 (0.928)	-0.0619 (0.629)
	FDI liabilities		0.0799*** (0.000)	0.0766*** (0.001)	0.0746*** (0.001)	0.0927*** (0.004)	0.0929*** (0.000)		0.0631*** (0.002)	0.0572*** (0.003)	0.0529*** (0.009)	0.0509** (0.013)	0.0480*** (0.008)
	Portfolio equity assets		-0.0613 (0.774)	-0.0779 (0.588)	-0.0756 (0.564)	0.0907 (0.710)	0.109 (0.646)		0.0802 (0.700)	0.109 (0.543)	0.0478 (0.640)	0.0251 (0.811)	0.0750 (0.701)
	Portfolio equity liabilities		-0.0295 (0.645)	-0.0210 (0.722)	-0.0204 (0.712)	-0.0544 (0.499)	-0.0589 (0.475)		-0.0282 (0.666)	-0.0319 (0.639)	-0.0316 (0.588)	-0.0224 (0.704)	-0.0134 (0.862)
	Debt assets		-0.0175 (0.642)	-0.0141 (0.341)	-0.0135 (0.401)	-0.0117 (0.639)	-0.0115 (0.571)		-0.0127 (0.754)	-0.00129 (0.967)	-0.0169 (0.506)	-0.0193 (0.445)	-0.0229 (0.158)
	Debt liabilities		0.0281 (0.195)	0.0311* (0.086)	0.0305 (0.129)	0.0269 (0.116)	0.0274 (0.155)		0.0158 (0.551)	0.0157 (0.441)	0.0202 (0.348)	0.0219 (0.351)	0.0232* (0.100)
Remittance inflows	-0.221 (0.326)	-0.156 (0.532)	-0.148 (0.404)	-0.170 (0.301)	-0.0830 (0.709)	-0.0311 (0.888)	-0.182 (0.208)	-0.0609 (0.786)	0.0202 (0.900)	-0.0630 (0.571)	-0.0796 (0.515)	0.116 (0.502)	
Control	Trade openness	-0.0137 (0.444)	-0.0256 (0.265)	-0.0318** (0.047)	-0.0303* (0.060)	-0.0332* (0.077)	-0.0371** (0.045)	-0.00325 (0.813)	-0.0134 (0.557)	-0.0229 (0.270)	-0.0189 (0.259)	-0.0168 (0.204)	-0.0184 (0.398)
	GDP per capita	-4.622 (0.217)	-4.027 (0.230)	-4.348 (0.202)	-4.565 (0.153)	-3.744 (0.278)	-3.325 (0.377)	-2.591 (0.340)	-2.408 (0.365)	-1.638 (0.449)	-2.375 (0.380)	-2.476 (0.356)	
	GDP growth	-0.0953* (0.075)	-0.0657 (0.194)	-0.0854** (0.010)	-0.0835** (0.033)	-0.0894** (0.035)	-0.0874* (0.072)	-0.0174 (0.775)	-0.0268 (0.687)	-0.0128 (0.883)	-0.0268 (0.742)	-0.0356 (0.564)	0.00350 (0.973)
	Inflation	-0.0147 (0.817)	-0.0335 (0.649)	-0.0357 (0.616)	-0.0403 (0.581)	-0.0170 (0.838)		-0.0304 (0.539)	0.00693 (0.874)	0.00900 (0.807)	0.0137 (0.764)		
	Domestic credit to priv. sec.	-0.00084 (0.982)	-0.0283 (0.381)	-0.0201 (0.476)	-0.0194 (0.484)			-0.0162 (0.573)	-0.0168 (0.520)	-0.0196 (0.393)			
	Executive constraints	-0.0110 (0.657)	0.00521 (0.805)	0.0116 (0.206)				0.00263 (0.818)	0.00194 (0.910)				
	GINI	0.0355 (0.591)	0.0314 (0.666)					0.0746 (0.205)	0.0618 (0.193)	0.0753 (0.103)	0.0645 (0.172)	0.0624 (0.235)	0.0900* (0.071)
Arellano-Bond test for AR(2) in first diff		0.626	0.571	0.524	0.56	0.615	0.645	0.221	0.236	0.279	0.237	0.214	0.259
Hansen test of over-identified restrict.		0.484	0.254	0.494	0.435	0.345	0.445	0.22	0.163	0.235	0.256	0.299	0.494
Number of observations		161	161	161	161	161	161	161	161	161	161	161	161
Number of countries		31	31	31	31	31	31	31	31	31	31	31	31
Number of instruments		30	30	31	29	30	29	31	30	31	31	31	26

Notes: p-values are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%. Time dummies are included in all specifications but are not reported.

Table 10. System GMM coefficient estimates. Dependent variables: poverty gap at \$2/day, poverty gap at \$1.25/day. *De facto* FI: capital stock.

Variable		Dependent: poverty gap at \$2/day						Dependent: poverty gap at \$1.25/day					
		(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Independent	Lagged poverty	0.775*** (0.000)	0.725*** (0.000)	0.719*** (0.000)	0.689*** (0.000)	0.709*** (0.000)	0.617*** (0.001)	0.595*** (0.000)	0.543*** (0.000)	0.615*** (0.000)	0.621*** (0.000)	0.620*** (0.000)	0.549*** (0.000)
	KAOPEN	-0.598** (0.034)	-0.470* (0.085)	-0.508** (0.045)	-0.546* (0.089)	-0.612** (0.046)	-0.722** (0.014)	-0.342* (0.082)	-0.261 (0.186)	-0.369** (0.040)	-0.430** (0.029)	-0.411** (0.043)	-0.493** (0.020)
	Total assets	-0.0167 (0.231)						-0.0130 (0.216)					
	Total liabilities	0.0237* (0.082)						0.0145 (0.193)					
	FDI assets		-0.0147 (0.825)	-0.0180 (0.821)	-0.0224 (0.753)	-0.0147 (0.856)	0.0196 (0.825)		-0.00142 (0.972)	-0.00984 (0.838)	-0.0176 (0.712)	-0.0195 (0.666)	-0.00791 (0.870)
	FDI liabilities		0.0566*** (0.001)	0.0554*** (0.001)	0.0484** (0.012)	0.0428*** (0.001)	0.0414*** (0.005)		0.0283** (0.022)	0.0332*** (0.000)	0.0302*** (0.002)	0.0295*** (0.002)	0.0302*** (0.001)
	Portfolio equity assets		-0.0350 (0.753)	-0.0232 (0.842)	-0.0456 (0.582)	0.00244 (0.981)	0.0104 (0.916)		-0.0171 (0.864)	0.0125 (0.900)	0.0373 (0.682)	0.0237 (0.787)	0.0470 (0.547)
	Portfolio equity liabilities		-0.0165 (0.775)	-0.0149 (0.814)	-0.0133 (0.790)	-0.0272 (0.587)	-0.0339 (0.514)		-0.00031 (0.993)	-0.0276 (0.607)	-0.0329 (0.514)	-0.0253 (0.573)	-0.0315 (0.498)
	Debt assets		-0.0263 (0.285)	-0.0233 (0.276)	-0.0255 (0.370)	-0.0250 (0.378)	-0.0309 (0.274)		-0.00821 (0.677)	-0.0140 (0.282)	-0.0137 (0.216)	-0.0150 (0.221)	-0.0170 (0.131)
	Debt liabilities		0.0186 (0.383)	0.0194 (0.355)	0.0231 (0.395)	0.0259 (0.214)	0.0222 (0.340)		0.00398 (0.737)	0.00846 (0.465)	0.00902 (0.421)	0.00957 (0.425)	0.00707 (0.543)
	Remittance inflows	-0.0939 (0.506)	-0.149 (0.202)	-0.113 (0.264)	-0.157* (0.050)	-0.113 (0.216)	-0.161** (0.034)	-0.0716 (0.335)	-0.0259 (0.792)	-0.0334 (0.695)	-0.0150 (0.845)	-0.0206 (0.787)	-0.0167 (0.717)
Control	Trade openness	-0.00635 (0.562)	-0.0104 (0.367)	-0.0134 (0.184)	-0.0154 (0.167)	-0.0156* (0.055)		-0.00284 (0.631)	-0.00598 (0.618)	-0.00682 (0.431)	-0.00881 (0.308)	-0.00748 (0.343)	
	GDP per capita	-1.540 (0.497)	-2.176 (0.190)	-1.868 (0.202)	-2.682 (0.151)	-2.161 (0.199)	-2.972 (0.138)	-1.103 (0.225)	-1.157 (0.150)	-0.635 (0.439)	-0.412 (0.653)	-0.455 (0.621)	-0.540 (0.404)
	GDP growth	-0.0216 (0.586)	-0.0229 (0.763)	-0.0160 (0.826)	-0.0330 (0.545)	-0.0118 (0.838)	-0.0253 (0.563)	-0.0219 (0.304)	-0.0215 (0.212)	-0.00737 (0.845)	-0.00205 (0.961)	-0.00655 (0.857)	-0.00444 (0.892)
	Inflation	-0.0198 (0.565)	0.00379 (0.893)	0.00219 (0.931)	0.00929 (0.796)			-0.00969 (0.626)	0.00325 (0.869)	-0.00297 (0.828)	-0.00243 (0.859)		
	Domestic credit to priv. sec.	-0.00864 (0.608)	-0.0108 (0.447)	-0.0113 (0.390)				-0.00088 (0.948)	-0.00184 (0.857)	-0.00571 (0.300)			
	Executive constraints	-0.00512 (0.494)	0.0126 (0.634)					0.00709 (0.449)	-0.00126 (0.799)				
	GINI	0.0411 (0.278)	0.0390 (0.282)	0.0407 (0.178)	0.0407 (0.265)	0.0440 (0.188)	0.0675** (0.021)	0.0428* (0.098)	0.0380* (0.052)	0.0432* (0.088)	0.0464* (0.096)	0.0466* (0.079)	0.0649* (0.050)
Arellano-Bond test for AR(2) in first diff.		0.134	0.179	0.185	0.157	0.194	0.171	0.172	0.183	0.245	0.247	0.235	0.261
Hansen test of over-identified restrict.		0.271	0.119	0.133	0.212	0.230	0.445	0.284	0.100	0.114	0.146	0.165	0.385
Number of observations		161	161	161	161	161	161	161	161	161	161	161	161
Number of countries		31	31	31	31	31	31	31	31	31	31	31	31
Number of instruments		30	31	31	31	31	31	29	31	31	31	30	29

Notes: p-values are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%. Time dummies are included in all specifications but are not reported.

Table 11. System GMM coefficient estimates. Dependent variable: income share of the lowest 20% and 10% of population. *De facto* FI: capital stock.

Variable		Dependent: income share of the lowest 20%						Dependent: income share of the lowest 10%					
		(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Independent	Lagged poverty	0.971*** (0.000)	0.977*** (0.000)	0.961*** (0.000)	0.970*** (0.000)	0.999*** (0.000)	0.995*** (0.000)	0.949*** (0.000)	0.971*** (0.000)	0.986*** (0.000)	0.997*** (0.000)	0.983*** (0.000)	0.995*** (0.000)
	KAOPEN	0.0630 (0.520)	0.0242 (0.813)	0.00661 (0.949)	0.0171 (0.886)	0.0335 (0.870)	-0.0203 (0.894)	0.0120 (0.801)	-0.00537 (0.908)	0.00663 (0.917)	0.00703 (0.930)	-0.0186 (0.824)	-0.00296 (0.977)
	Total assets	0.00156 (0.719)						0.00194 (0.314)					
	Total liabilities	-0.00254 (0.417)						-0.00129 (0.328)					
	FDI assets		-0.0120 (0.384)	-0.00817 (0.514)	-0.00474 (0.766)	-0.00700 (0.723)	-0.00773 (0.701)		-0.00471 (0.499)	-0.00417 (0.692)	-0.00248 (0.867)	0.000728 (0.951)	-0.00306 (0.774)
	FDI liabilities		-0.0100* (0.076)	-0.0121* (0.081)	-0.0126* (0.081)	-0.0100* (0.097)	-0.00899* (0.090)		-0.00550** (0.026)	-0.00701* (0.077)	-0.00720* (0.092)	-0.00543* (0.083)	-0.00479* (0.086)
	Portfolio equity assets		-0.00123 (0.982)	0.00707 (0.912)	0.00946 (0.901)	0.0285 (0.813)	0.0465 (0.567)		0.00342 (0.888)	0.0129 (0.784)	0.0140 (0.818)	0.0307 (0.437)	0.0237 (0.584)
	Portfolio equity liabilities		-0.000024 (0.999)	-0.00400 (0.808)	-0.00213 (0.920)	-0.000023 (0.999)	-0.00554 (0.853)		-0.000260 (0.973)	0.000229 (0.985)	0.000959 (0.956)	-0.00419 (0.736)	-0.00485 (0.725)
	Debt assets		0.00379 (0.556)	0.00328 (0.624)	0.00439 (0.549)	0.00756 (0.164)	0.00645 (0.258)		0.00297 (0.259)	0.00382 (0.190)	0.00455 (0.194)	0.00429 (0.169)	0.00331 (0.272)
	Debt liabilities		-0.00188 (0.413)	-0.00176 (0.397)	-0.00164 (0.440)	-0.00303 (0.297)	-0.00223 (0.486)		-0.000981 (0.381)	-0.00131 (0.360)	-0.00146 (0.440)	-0.00123 (0.564)	-0.00126 (0.546)
	Remittance inflows	0.0283 (0.695)	-0.00692 (0.915)	-0.00468 (0.942)	0.000888 (0.990)	0.0402 (0.687)	0.0525 (0.370)	0.0231 (0.407)	0.00148 (0.957)	0.0197 (0.608)	0.0214 (0.637)	0.0374 (0.293)	0.0292 (0.415)
Control	Trade openness	-0.00033 (0.960)	-0.00134 (0.795)					-0.00032 (0.917)	-0.000806 (0.706)				
	GDP per capita	0.179 (0.810)	-0.531 (0.306)	-0.475 (0.401)	-0.453 (0.528)	-0.00731 (0.995)	0.232 (0.772)	0.177 (0.570)	-0.246 (0.289)	-0.0392 (0.918)	-0.0468 (0.930)	0.198 (0.671)	0.174 (0.750)
	GDP growth	0.0351** (0.025)	0.0257 (0.380)	0.0342* (0.064)	0.0311 (0.270)	0.0310 (0.213)	0.0284 (0.372)	0.0153* (0.091)	0.0119 (0.395)	0.0142 (0.470)	0.0112 (0.707)	0.0109 (0.650)	0.0149 (0.377)
	Inflation	0.00510 (0.784)	0.0149 (0.140)	0.0112 (0.166)	0.0125 (0.221)	0.00372 (0.858)		0.000455 (0.962)	0.00475 (0.313)	0.000489 (0.936)	0.0000345 (0.997)	-0.000108 (0.990)	
	Domestic credit to priv. sec.	0.000216 (0.986)	0.00607 (0.297)	0.00658 (0.233)	0.00497 (0.402)			-0.00123 (0.844)	0.00221 (0.384)	0.00206 (0.543)	0.00148 (0.757)		
	Executive constraints	-0.00913 (0.250)	-0.00896 (0.370)	-0.00937 (0.298)				-0.00444 (0.236)	-0.00436 (0.300)	-0.00442 (0.327)			
Arellano-Bond test for AR(2) in first diff		0.7	0.628	0.612	0.372	0.348	0.489	0.446	0.535	0.379	0.786	0.91	0.607
Hansen test of over-identified restrict.		0.21	0.633	0.756	0.521	0.143	0.157	0.229	0.756	0.168	0.122	0.182	0.152
Number of observations		159	159	159	159	159	159	159	159	159	159	159	159
Number of countries		29	29	29	29	29	29	29	29	29	29	29	29
Number of instruments		29	28	28	26	28	28	28	28	29	27	28	27

Notes: p-values are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%. GINI index is not included as it is highly correlated with lagged dependent variable (-96.30% with income share of the lowest 20%, -94.43% with income share of the lowest 10%). Time dummies are included in all specifications.

supporting H4b. However, the evidence for this occurrence is weak as H4b cannot be rejected at 10% significance level only. The remaining types of foreign stock are, again, not found to affect any poverty measures.

The results for control variables in Tables 9-11 are slightly different than the ones reported earlier. GINI index seems, again, to increase poverty gap, mainly at \$1.25/day. GDP growth also appears to raise income share of the lowest 20% of population, but the evidence is weaker with the statistical significance found only in models (1) and (3) in Table 11. Trade openness now turns out to reduce headcount ratio at \$2/day

2.7. Conclusions

Based on the data from a group of 30 developing countries, we find evidence that *de jure* and *de facto* financial integration have opposite effects on absolute poverty. The former is found to reduce the number of the poor and poverty depth (supporting H1), while *de facto* FI not only increases the incidence of poverty and its depth, but also reduces the relative income of the poorest (supporting H3b and H4b, respectively). Among *de facto* FI measures, mainly FDI inflows and liabilities are evidenced to affect poverty. We offer the possible explanations of these findings below.

The common perception is that *de jure* FI leads to *de facto* FI and hence, the relevant measures of these two types of FI should have similar effect on poverty. However, the existing literature has shown that increasing capital controls has little effect on capital flows. Jinjarak et al. (2013), for example, find no evidence that raising capital restrictions in Brazil is effective in reducing capital inflows from foreign mutual funds. China is also an excellent example of the lack of interdependency between capital controls and flows. Despite having one of the strictest capital controls in the World (with the lowest KAOPEN value in our sample), China remains the biggest receiver of FDI among developing countries, while being the largest holder of foreign reserves, according to Wang et al. (2017). To explain global imbalances caused by (1) opposite movements in financial (i.e. portfolio investment) and fixed (i.e. FDI) capital flows and (2) large and persistent trade deficits run in industrial countries with the South, they develop a two-country model (with China representing the South, and the USA representing the North) showing that underdeveloped financial markets in the South is the main driver of the observed two-way capital flows between the North and the South. This is, the inefficient banking-credit system causes insufficient investment on the firm side and excessive saving on the household side. As a result, the scarce fixed capital increases marginal product capital (attracting FDI inflows), while excess household savings lower real interest rate (causing

portfolio investment outflows to countries with higher rates). Wang et al. (2017) conclude that “the reduction in global imbalances (for better or worse) hinges neither on adjusting the exchange rates nor on *capital account liberalization* but rather on improving emerging economies’ banking systems (i.e. reducing borrowing constraints facing both households and firms)” (p. 260).

Since *de jure* and *de facto* FI are not necessarily interrelated, their opposite effects on poverty found in this paper can be explained by different mechanisms through which they affect the poor. As pointed out in the theoretical framework in Chapter 1, Section 1.8.2, *de jure* FI can have a strong disciplining role in the economy. Firstly, lifting capital account restrictions can motivate domestic banks to allocate capital to soft-information borrowers, including low-income individuals. By doing so, these banks can strengthen their market position before a potential influx of foreign competitors takes place. Secondly, as proved by Norback et al. (2014), financial liberalization can induce government to improve local business environment, which in turn boosts entrepreneurial activities. The increased number of start-ups, by creating new jobs for the local labour force, can benefit the poor. To check whether KAOPEN can indeed be associated with better business environment and higher entrepreneurial activities in our sampled countries, we examine the correlation between the relevant measures: number of start-up procedures to register a business³⁸ (proxy for a domestic business environment), and a new business density³⁹ (proxy of entrepreneurial activities). Both measures are taken from the World Development Indicators database. The results indicate that KAOPEN is significantly correlated with both of the measures as follows: -25.05% (p-value=0.0001) with the number of start-up procedures, and 33.10% (p-value=0.0000) with the new business density. Hence, it seems that relaxing capital restrictions alone can be associated with improved domestic business environment and higher entrepreneurial activities, which in turn might reduce poverty rates. Interestingly, these effects might be achieved without a presence of *de facto* financial integration.

To some extent, KAOPEN might also capture the effect of cross-border lending that is not picked up by the other measures employed in this study (i.e. loans from non-resident banks (amount outstanding) and debt liabilities). As discussed in Section 2.3, the latter mainly cover loans from the BIS-reporting banks, and therefore do not reflect the full picture of bank loan flows.

³⁸ Start-up procedures are those required to start a business, including interactions to obtain necessary permits and licenses and to complete all inscriptions, verifications, and notifications to start operations. The data is available for all countries and years in scope of this study.

³⁹ New businesses registered are the number of new limited liability corporations registered in the calendar year, measured per 1000 people aged 15-64. The data is available for only 27 countries in scope.

FDI inflows and liabilities, opposite to KAOPEN, increase the number of the poor, probably through the low-skilled job destruction effect. As mentioned in the theoretical framework in Chapter 1, Section 1.8.2, the presence of MNEs can lead to a restructuring of domestic firms or foster local competition, crowding out domestic firms. As a result, unskilled workers, who are typically poor, suffer disproportionately more than skilled workers from the employment reduction.

We also need to acknowledge some limitations of our study. The first shortcoming, faced by most of the poverty-centred papers, is the lack of strict comparability of poverty measures across countries, caused by different method and data collected in the underlying household surveys. For example, some surveys use income, and some consumption as a proxy for well-being. Secondly, the only relative poverty measure used in this study is income share of the lowest 20% and 10% of the population reported by the World Bank. Since no effect of financial integration on this poverty measure is found, as opposed to absolute measures (i.e. headcount ratio and poverty gap), it could be beneficial to repeat the analysis using other relative poverty measure, such as headcount living at less than 60% of the country-specific median income. Unfortunately, at the time of writing, no such measure is available for a cross-country analysis. Thirdly, in an attempt to ensure good data quality, we have limited our dataset to a relatively small number of countries, nearly half of which are Latin American (shown in Appendix A). As a result, some of our specifications have experienced an issue of too many instruments and could not be reported in this paper (for example, specifications with lags of the FI measures to check the dynamic effect of FI on poverty). This has restricted us from getting the full picture of the FI-poverty relationship. Fourthly, despite the best effort to capture all types of *de facto* financial integration, we could not find good data for cross-border bank lending. We feel that bank loans might have a significant influence on poverty and might, to some extent, also explain the opposite effect of *de facto* and *de jure* FI. Fifthly, this paper only considers a linear and direct impact of financial integration on poverty. From the theoretical standpoint, financial integration can also affect poverty indirectly through economic growth. Lastly, our economic models estimate only short-term effect of financial integration. While we believe *de jure* FI to have disciplining effect in the short-run, which alleviates capital constraints of the poor and entrepreneurs and improves local business environment, such effect can disappear in the long-run. In fact, there is a possibility that in the long-run *de jure* FI will affect *de facto* FI. Hence, the two types of FI can have similar effects on poverty in the long run.

Despite the limitations above, we believe that our paper makes further contribution to a limited literature examining financial integration-poverty relationship. It also has important policy-making implication: financial integration brings more benefits than costs

to developing countries as the positive effect of capital account liberalization is proved to be more profound than the negative effect of actual capital mobility. However, further research is needed to fully understand the complex linkages between financial integration and poverty. It would be beneficial to explore their non-linear relationship, as well as indirect channels of influence. Additionally, it would be interesting to test the threshold hypothesis, which indicates that a country can benefit from financial integration only when the certain minimum conditions have been achieved.

References

- Acemoglu, D. and Johnson, S. (2005) Unbundling institutions. *Journal of Political Economy*, vol. 113, pp. 949-995.
- Agenor, P.-R. (1998) Stabilization Policies, Poverty, and the Labour Market. [Online] Available from: http://personalpages.manchester.ac.uk/staff/pierre-richard.agenor/pdfs/lm_stabilization1_wp.pdf [Accessed 1st Dec 2018].
- Agenor, P.-R. (2004) Does Globalization Hurt the Poor? *International Economics and Economic Policy*, vol. 1, pp. 21-51.
- Aggarwal, R., Demirgüç-Kunt, A., & Peria, M. S. M. (2011). Do remittances promote financial development? *Journal of Development Economics*, 96(2), 255–264.
- Ahn, S. C. and Schmidt, P. (1995) Efficient Estimation of Models for Dynamic Panel Data. *Journal of Econometrics*, vol. 68, pp. 5-27.
- Aisbett, E. et al. (2006) Globalization and Poverty: What Is the Evidence? MPRA Paper No. 36595.
- Akoum, I. F. (2008) Globalization, Growth, and poverty: The Missing Link. *International Journal of Social Economics*, vol. 35, pp. 226-238.
- Amuedo-Dorantes, C., & Pozo, S. (2011). Remittances and income smoothing. *The American Economic Review*, 101(3), 582–587.
- Arrelano, M. and Bond, S. (1991) Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies*, vol. 58, pp. 277-297.
- Arestis, P. and Caner, A. (2009) Financial Liberalization and the Geography of Poverty. *Cambridge Journal of Regions, Economy and Society*, vol. 2, pp. 229-244.
- Arestis, P. and Caner, A. (2010) Capital Account Liberalisation and Poverty: How Close Is the Link? *Cambridge Journal of Economics*, vol. 34, pp. 295-323.
- Baltagi, B. H. et al. (2009) Financial Development and Openness: Evidence from Panel Data. *Journal of Development Economics*, vol. 89, pp. 285-296.
- Baltagi, B. H. (2013) *Econometric Analysis of Panel Data*. Fifth edition, John Wiley & Sons Ltd, Cornwall.
- Banerjee, A. V. and Newman, A. F. (1994) Poverty, Incentives, and Development. *The American Economic Review*, vol. 84, pp. 211-215.
- Beck, T. et al. (2000) A New Database on Financial Development and Structure. *World Bank Economic Review*, vol. 14, pp. 597-605.
- Beck, T. et al. (2009) Financial Institutions and Markets across Countries and over Time: Data and Analysis. World Bank Policy Research Working Paper 4943.

- Bellemare, M. F., Masaki, T. and Pepinsky, T. B. (2015) Lagged Explanatory Variables and the Estimation of Causal Effect. [Online] Available from: http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2568724 [Accesses 1st Dec 2018].
- Besley, T. and Burgess, R. (2003) Halving Global Poverty. *Journal of Economic Perspectives*, vol. 17, pp. 3-22.
- Blundell, R. and Bond, S. (1998) Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics*, vol. 87, pp. 115-143.
- Cardoso, E. (1992) Inflation and Poverty. National Bureau of Economic Research Working Paper No. 4006.
- Cihak, M. et al. (2012) Benchmarking Financial Development around the World. World Bank Policy Research Working Paper 6175.
- Chinn, M. D. and Ito, H. (2006) What Matters for Financial Development? Capital Controls, Institutions, and Interactions. *Journal of Development Economics*, vol. 81, pp. 163-192.
- Chinn, M. D. and Ito, H. (2008) A New Measure of Financial Openness. *Journal of Comparative Policy Analysis*, vol. 10, pp. 309-322.
- Chong, A. and Calderon, C. (2000) Institutional quality and distribution of income. *Economic Development and Cultural Change*, vol. 48, pp. 761-786.
- Dornbusch, R. et al. (2000) Contagion: Understanding How It Spreads. *The World Bank Research Observer*, vol. 15, pp. 177-197.
- Duclos, J.-Y. and O'Connell, (2009) Is Poverty a Binding Constraint on Growth in Sub-Saharan Africa? Available from: http://dspace.africaportal.org/jspui/bitstream/123456789/32220/1/Duclos_OConnell.pdf [Accessed 12th Dec 2012].
- Durdu, C B. et al. (2009) Precautionary Demand for Foreign Assets in Sudden Stop Economies: An Assessment of the New Mercantilism. *Journal of Development Economics*, vol. 89, pp. 194-209.
- Easterly, W. and Fischer, S. (2001) Inflation and the Poor. *Journal of Money, Credit, and Banking*, vol. 33, pp. 160-178.
- Easterly, W. (2006) Reliving the 1950s: The Big Push, Poverty Traps, and Take-offs in Economic Development. *Journal of Economic Growth*, vol. 11, pp. 289-318.
- Fenster, R. C. and Hanson, G. H. (1997) Foreign Direct Investment and Relative Wages: Evidence from Mexico's maquiladoras. *Journal of International Economics*, vol. 42, pp. 371-393.
- Fernandez, A. et al. (2015) Capital Control Measures: A New Dataset. IMF Working Paper WP/15/80.
- Ferreira, F. et al. (1999) Protecting the Poor from Macroeconomic Shocks: An Agenda for Action in a Crisis and Beyond. World Bank Policy Research Working Paper, no. 2160.

- Figini, P. and Santarelli, E. (2006) Openness, Economic Reforms, and Poverty: Globalization in Developing Countries. *The Journal of Developing Areas*, vol. 39, pp. 129-151.
- Giannetti, M. and Ortega, S. (2009) Financial Integration and Firm Performance: Evidence from Foreign Bank Entry in Emerging Markets. *Review of Finance*, vol. 13, pp. 181-223.
- Goodhand, J. (2001) Violent Conflict, Poverty and Chronic Poverty. CPRC Working Paper No. 6.
- Goudie, A. and Ladd, P. (1999) Economic Growth, Poverty and Inequality. *Journal of International Development*, vol. 11, pp. 177-195.
- Grabel, I. (2003) Averting Crisis? Assessing Measures to Manage Financial Integration in Emerging Economies. *Cambridge Journal of Economics*, vol. 27, pp. 317-336.
- Huang (2010) Inward and Outward FDI and Poverty: East Asia vs. Latin America. *Review of World Economics*, vol. 146, pp. 763-779.
- Hulme, D. and Shepherd, A. (2003) Conceptualizing Chronic Poverty. *World Development*, vol. 31, pp. 403-423.
- Jalilian, H. and Kirkpatrick, C. (2002) Financial Development and Poverty Reduction in Developing Countries. *International Journal of Finance and Economics*, vol. 7, pp. 97-108.
- Jalilian, H. and Weiss, J. (2002) Foreign Direct Investment and Poverty in the ASEAN Region. *ASEAN Economic Bulletin*, vol. 19, pp. 231-253.
- Jinjarak, Y., Noy, I., & Zheng, H. (2013). Capital controls in Brazil - Stemming a tide with a signal? *Journal of Banking and Finance*, 37(8), 2938–2952.
- Kehoe, T. J. and Ruhl, K. J. (2009) Sudden Stops, Sectoral Reallocations, and the Real Exchange Rate. *Journal of Development Economics*, vol. 89, pp. 235-249.
- King, R. G. and Levine, R. (1993) Finance, Entrepreneurship, and Growth: Theory and Evidence. *Journal of Monetary Economics*, vol. 32, pp. 513-42.
- Klassen, S. (2003) In Search of the Holy Grail: How to Achieve Pro-Poor Growth. In Tungodden, B. et al. (2003) *Toward Pro-Poor Policies. Aid, Institutions, and Globalization*. 5th Annual World Bank Conference on Development Economics – Europe.
- Kose, M. A. et al. (2009) Financial Globalization: A Reappraisal. *International Monetary Fund Staff Papers*, vol. 56, pp. 8-62.
- Lane, P. R. and Milesi-Ferretti, G. M. (2007) The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004. *Journal of International Economics*, vol. 73, pp. 223-250.
- Masten, A. et al. (2008) Non-linear Growth Effects of Financial Development: Does Financial Integration Matter? *Journal of International Money and Finance*, vol. 27, pp. 295-313.

- Mauro, P. (1998) Corruption: Causes: Consequences, and Agenda for Further Research. *Finance and Development*, vol. 35, pp. 11-14.
- McKay, A. and Lawson, D. (2003) Assessing the Extent and Nature of Chronic Poverty in Low Income Countries: Issues and Evidence. *World Development*, vol. 31, pp. 425-439.
- Mishkin, F. S. (2006) *The Next Great Globalization: How Disadvantaged Nations Can Harness Their Financial Systems to Get Rich*. Princeton University Press, New Jersey.
- Nissanke, M. and Thorbecke, E. (2006) Channels and Policy Debate in the Globalization-Inequality-Poverty Nexus. *World Development*, vol. 34, pp. 1338-1360.
- Okpe, I. J. and Abu, G. A. (2009) Foreign Private Investment and Poverty Reduction in Nigeria (1975 to 2003). *Journal of Social Science*, vol. 19, pp. 2005-2011.
- Praag, C. M. (1996) *Determinants of Successful Entrepreneurship*. Amsterdam, Thesis Publishers.
- Prasad, E. et al. (2003) Effects of Financial Globalization on Developing Countries: Some Empirical Evidence. *International Monetary Fund Occasional Paper*, no. 220.
- Reisen, H. and Soto, M. (2001) Which Types of Capital Inflows Foster Developing-Country Growth? *International Finance*, vol. 4, pp. 1-14.
- Ravallion, M (2004) Pro-Poor Growth: A Primer. *World Bank Policy Research Working Paper*, No. 3242.
- Roodman, D. (2009a) A Note on the Theme of Too Many Instruments. *Oxford Bulletin of Economics and Statistics*, vol. 71, pp. 135-158.
- Roodman, D. (2009b) How to Do xtabond2: An Introduction to Difference and System GMM in Stata. *The Stata Journal* (2009), vol. 9, pp. 86-136.
- Romer, C. and Romer, D. (1998) Monetary Policy and the Well-being of the Poor. *National Bureau of Economic Research Working Paper* No. 6793.
- Ruggeri Laderchi, C. et al. (2003) Does it Matter that We Do not Agree on the Definition of Poverty? A Comparison of Four Approaches. *Oxford Development Studies*, vol. 31, pp. 243-274.
- Schmukler, S. L. (2003) Financial Globalization: Gain and Pain for Developing Countries. *Federal Reserve Bank of Atlanta Economic Review*, vol. 89, pp. 39-66.
- Schumpeter, J. A. (1934) *The Theory of Economic Development*. Cambridge, MA, Harvard University.
- Sen, A. (1993) Capability and well-being, in: Nussbaum, M. C. and Sen, A. (eds) *The Quality of Life*, Oxford, Clarendon Press, pp. 30-53.
- Shapiro, F. A., & Mandelman, F. S. (2016). Remittances, entrepreneurship, and employment dynamics over the business cycle. *Journal of International Economics*, 103, 184–199.

- Stel, A. et al. (2005) The Effect of Entrepreneurial Activity on National Economic Growth. *Small Business Economics*, vol. 24, pp. 311-321.
- Thorbecke, E. (2013) The Interrelationship Linking Growth, Inequality and Poverty in Sub-Saharan Africa. *Journal of African Economies*, vol. 22, pp. 115-148.
- Tsai, P. L. and Huang C. H. (2007) Openness, Growth and Poverty: The Case of Taiwan. *World Development*, vol. 35, pp. 1858-1871.
- Uddin, G. S., Shahbaz, M., Arouri, M., Teulon, F. (2014) Financial Development and Poverty Reduction Nexus: A Cointegration and Causality Analysis in Bangladesh. *Economic Modelling*, vol. 36, pp. 405-412.
- Wang, P., Wen, Y., Xu, Z. (2017) Two-Way Capital Flows and Global Imbalances. *The Economic Journal*, vol. 127, pp. 229-269.
- Wennekers, S. and Thurik, R. (1999) Linking Entrepreneurship and Economic Growth. *Small Business Economics*, vol. 13, pp. 27-55.
- Windmeijer, F. (2005) A finite Sample Correction for the Variance of Linear Efficient Two-Step GMM Estimators. *Journal of Econometrics*, vol. 126, pp. 25-51.
- Winters, L. A. (2002) Trade Liberalization and Poverty: What Are the Links? *World Economy*, vol. 25, pp. 1339-1367.
- Winters, L. A. et al. (2004) Trade Liberalization and Poverty: The Evidence So Far. *Journal of Economic Literature*, vol. XLII, pp.72-115.
- World Bank (2001) *World Development Report 2000/2001: Attacking Poverty*. World Bank and Oxford University Press.
- Yang, D. (2008). International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants. *The Economic Journal*, 118, 591–630.
- Yang, D., & Choi, H. J. (2007). Are remittances insurance? Evidence from rainfall shocks in the Philippines. *The World Bank Economic Review*, 21(2), 219–248.

Appendices

Appendix A. List of countries.

Country Name	Available Years of Poverty Data
Armenia	2004-2011
Belarus	2004-2011
Bolivia	2004-2009, 2011
Brazil	2004-2009, 2011
Bulgaria	2007,2008, 2010, 2011
Cambodia	2004, 2007-2011
China	2005, 2008, 2010, 2011
Colombia	2004-2011
Costa Rica	2004-2011
Dominican Republic	2004-2011
Ecuador	2004-2011
El Salvador	2004-2011
Georgia	2004-2011
Honduras	2004-2011
Indonesia	2005, 2008, 2010, 2011
Kazakhstan	2004-2008, 2010
Kyrgyz Republic	2004-2011
Latvia	2004, 2006, 2008, 2010, 2011
Lithuania	2004-2006, 2008, 2010, 2011
Macedonia	2004-2006, 2008
Mexico	2004-2006, 2008, 2010
Moldova	2004-2011
Pakistan	2005, 2006, 2008, 2011
Panama	2004-2011
Paraguay	2004-2011
Peru	2004-2011
Romania	2004-2011
Russian Federation	2004-2009
Turkey	2004-2011
Ukraine	2004-2010
Uruguay	2004-2011
Vietnam	2004, 2006, 2008, 2010

Appendix B. Control variables used in the existing FI-poverty literature.

Author	Coverage	Control variables
Jalilian and Weiss (2002)	<ul style="list-style-type: none"> • 26 countries (18 developing, including 5 ASEAN, and 8 developed) • 65-147 observations 	<ul style="list-style-type: none"> • GDP per capita growth • Change in Gini index • Relative income gap (ratio of GDP per capita to the US GDP per capita)
Agenor (2004)	<ul style="list-style-type: none"> • 16 developing countries • Time frame: 1984 - 1998 • 60 observations 	<ul style="list-style-type: none"> • Inflation • Youth literacy rate in % of population aged 15-24 • GDP per capita • GDP per capita annual growth • Real effective exchange rate annual rate of change • Terms of trade annual change
Santarelli and Figini (2006)	<ul style="list-style-type: none"> • Absolute poverty: <ul style="list-style-type: none"> ○ 18-54 developing countries ○ Time frame: 1970, 1980, 1990, 1998 ○ 108-203 observations • Relative poverty: <ul style="list-style-type: none"> ○ 69 countries ○ Time frame: 1970-1998 ○ 166 observations 	<ul style="list-style-type: none"> • Set of dummy variables capturing geographic, cultural and historical differences • Specialization dummy capturing the most important sector for each country among agricultural, manufacturing, oil & other minerals • GDP per capita • Country size (population, density) • Institutions (democracy, political freedom)
Tsai and Huang (2007)	<ul style="list-style-type: none"> • Taiwan • Time frame: 1964 -2003 • 40 observations 	<ul style="list-style-type: none"> • GDP per capita • Trade openness (sum of imports and exports, %GDP) • Government final consumption expenditure (% GDP) • Share of government spending on social security in government consumption
Huang et al. (2010)	<ul style="list-style-type: none"> • 12 East Asian and Latin American countries • 1970-2005 • 92-93 observations 	<ul style="list-style-type: none"> • GDP per capita • Trade openness (sum of imports and exports, % GDP) • Government final consumption expenditure (% GDP)
Arestis and Caner (2010)	<ul style="list-style-type: none"> • 59-67 developing countries • Time frame: 1985-2005 • 121-173 observations 	<ul style="list-style-type: none"> • GDP per capita growth • Institutions index • Fertility (total number of birth per woman) • Inflation • GINI • Government final consumption expenditure • Education (primary rate of schooling)

Appendix C. Control variables used in this study.

Variable	Definition	Source
GDP per capita based on purchasing power parity	PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates, and divided by mid-year population. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2011 international dollars.	World Development Indicators (World Bank), March 2015 version
GDP per capita growth	Annual percentage growth rate of GDP per capita.	World Development Indicators (World Bank), March 2015 version
Inflation	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.	World Development Indicators (World Bank), March 2015 version
Trade openness (% GDP)	Trade openness is the sum of imports and exports of goods and services measured as a share of GDP.	World Development Indicators (World Bank), March 2015 version
GINI index	GINI index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The GINI index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a GINI index of 0 represents perfect equality, while an index of 100 implies perfect inequality.	World Development Indicators (World Bank), March 2015 version
Domestic credit to private sector (% GDP)	Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises.	Global Financial Development Dataset (World Bank), June 2016 version
Executive constraints	A proxy for property rights. This variable refers to the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities. Such limitations may be imposed by any "accountability groups." In Western democracies these are usually legislatures. Other kinds of accountability groups are the ruling party in a one-party state; councils of nobles or powerful advisors in monarchies; the military in coup-prone polities; and in many states a strong, independent judiciary.	Polity IV, 2015 version

Appendix D. *De facto* FI stock and poverty measures.

Figure 10. FDI stock, poverty headcount ratio and poverty gap.

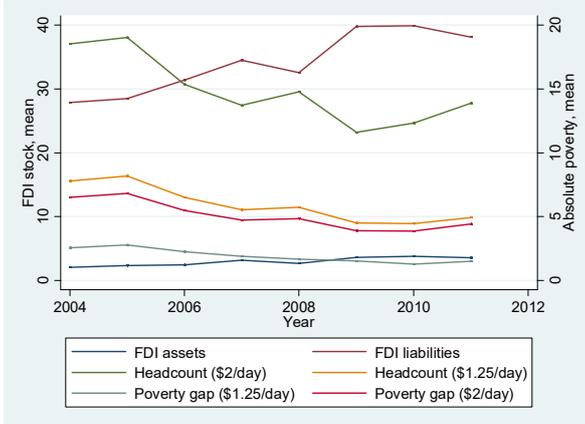


Figure 11. FDI stock and income share of the poor.

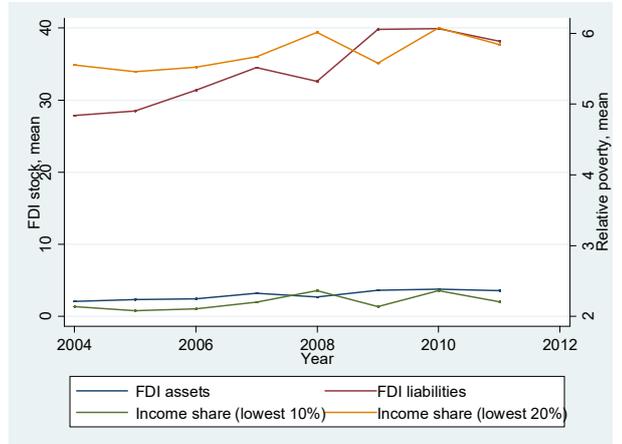


Figure 12. Portfolio stock, poverty headcount ratio and poverty gap.

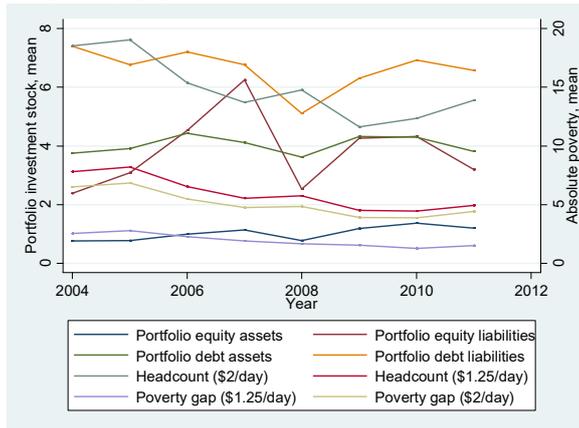


Figure 13. Portfolio stock and income share of the poor.

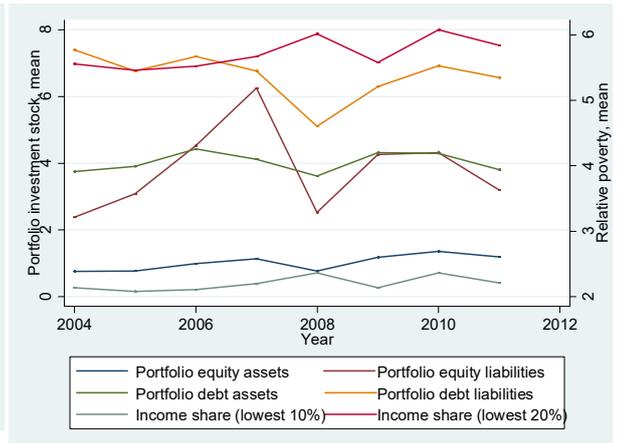


Figure 14. Debt stock, poverty headcount ratio and poverty gap.

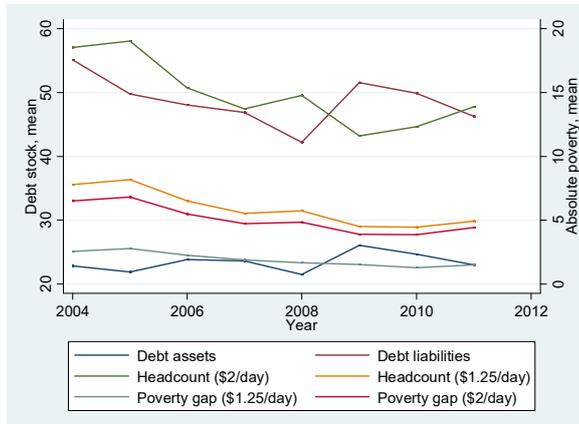
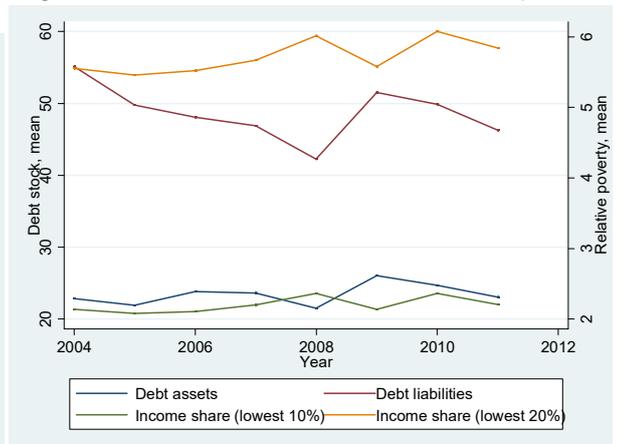


Figure 15. Debt stock and income share of the poor.



Appendix E. System GMM coefficient estimates, using portfolio debt assets and liabilities.

Variable		Dependent:	Dependent:	Dependent: poverty	Dependent: poverty	Dependent: income	Dependent: income
		headcount ratio at \$2/day	headcount ratio at \$1.25/day	gap at \$2/day	gap at \$1.25/day	share of the lowest 20%	share of the lowest 10%
		(1)	(2)	(3)	(4)	(5)	(6)
Independent	Lagged poverty	0.758*** (0.000)	0.623*** (0.001)	0.642*** (0.000)	0.522*** (0.001)	0.994*** (0.000)	0.974*** (0.000)
	KAOPEN	-0.630 (0.205)	-0.690* (0.063)	-0.450 (0.143)	-0.253* (0.095)	0.0261 (0.824)	-0.00737 (0.898)
	FDI assets	0.0660 (0.632)	0.0563 (0.655)	0.0413 (0.619)	0.00478 (0.913)	-0.0105 (0.446)	-0.00437 (0.544)
	FDI liabilities	0.0869*** (0.000)	0.0510** (0.019)	0.0417*** (0.003)	0.0214 (0.136)	-0.0127* (0.080)	-0.00679* (0.071)
	Portfolio equity assets	-0.0463 (0.831)	0.133 (0.490)	0.0761 (0.603)	-0.00134 (0.983)	0.000292 (0.997)	0.00593 (0.873)
	Portfolio equity liabilities	-0.0288 (0.731)	-0.0294 (0.671)	-0.0210 (0.700)	0.00387 (0.907)	-0.000511 (0.982)	-0.00192 (0.871)
	Portfolio debt assets	0.0219 (0.851)	0.0207 (0.768)	0.0167 (0.742)	0.0150 (0.727)	0.00580 (0.790)	0.00253 (0.808)
	Portfolio debt liabilities	0.00318 (0.964)	0.0315 (0.552)	0.0164 (0.674)	0.00272 (0.923)	0.0131 (0.209)	0.00608 (0.306)
	Remittance inflows	-0.122 (0.571)	0.0359 (0.822)	0.0113 (0.924)	0.00171 (0.971)	0.00680 (0.933)	0.00850 (0.827)
	Control	Trade openness	-0.0225 (0.246)	-0.0184 (0.358)	-0.0153 (0.282)	-0.00898 (0.452)	-0.00227 (0.567)
GDP per capita		-4.399 (0.104)	-2.404 (0.239)	-2.027 (0.153)	-1.183* (0.084)	-0.540 (0.411)	-0.195 (0.552)
GDP growth		-0.0990** (0.034)	-0.0505 (0.312)	-0.0415 (0.107)	-0.0270** (0.046)	0.0336 (0.150)	0.0160 (0.438)
Inflation		-0.0213 (0.792)	0.00978 (0.813)	0.00581 (0.839)	0.00660 (0.753)	0.0184* (0.077)	0.00531 (0.386)
Domestic credit to priv. sec.		-0.0366 (0.212)	-0.0180 (0.489)	-0.0142 (0.403)	-0.00389 (0.710)	0.00590 (0.171)	0.00254 (0.437)
Property rights		0.00259 (0.854)	-0.000626 (0.963)	-0.00502 (0.506)	-0.00158 (0.674)	-0.00792 (0.377)	-0.00355 (0.488)
GINI		0.0334 (0.597)	0.0686 (0.194)	0.0445 (0.230)	0.0415* (0.058)		
Arellano-Bond test for AR(2) in first diff.		0.556	0.229	0.151	0.177	0.645	0.588
Hansen test of over-identified restrict.		0.175	0.169	0.123	0.142	0.592	0.524
Number of observations		161	161	161	161	159	159
Number of countries		31	31	31	31	29	29
Number of instruments		31	31	31	31	29	29

Note: p-values are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%. Time dummies are included in all specifications but are not reported.

Chapter 3: Financial integration and entrepreneurship

3.1. Introduction

The effect of financial integration (FI) on entrepreneurship has been a subject of many researchers' interest. However, most of the existing literature does not account for the multidimensional nature of financial integration and focuses on only one or two types of capital inflows. The reported empirical results are often conflicting and do not allow to reach a unified conclusion regarding the FI-entrepreneurship relationship. Furthermore, both theory and evidence are lacking on how nascent entrepreneurs (i.e. individuals currently involved in a start-up process), who might require financing the most, are affected by FI.

While FI is a broad concept and the literature differentiates between *de jure* FI (policies on capital account liberalization) and *de facto* FI (actual capital flows) (e.g. Prasad et al., 2003), to the best of our knowledge, the effect of the former on entrepreneurship has not been studied yet. The only exception is Alfaro & Charlton (2008), whose results indicate that countries with more relaxed capital controls are more likely to experience greater entrepreneurship proxied by increased activity among new and small firms.

Among capital flows, foreign direct investment (FDI) inflows have gained the most scholars' attention, but both theoretical and empirical literature provide conflicting views on the impact of FDI on entrepreneurship. The studies based on occupational choice models, developed by, for example, Grossman (1984), provide evidence that Multinational Enterprises (MNEs) presence crowd out entrepreneurial class (e.g. Backer & Slenwaegen, 2003; Danakol et al., 2017). On the other hand, based on the spillovers theories (developed by, for example, Acs et al., 2007, Acs et al., 2009, and Markusen & Venable, 1999), numerous empirical papers report a positive relationship between MNEs entry and entrepreneurial activity (e.g. Gorg & Strobl, 2002; Javorcik, 2004; Clercq et al., 2008; Alfaro & Charlton, 2008; Ayyagani & Kosova, 2010). The evidence is also conflicting in case of foreign bank presence (i.e. FDI into the financial sector). While some researchers prove that foreign bank presence improves small and young firms access to cheaper financing (e.g. Giannetti & Ongena, 2009; Dell'Ariscia and Marquez, 2004; Clarke et al., 2006), others show that foreign banks hurt opaque borrowers, such as start-ups, due to their cream-skimming practices (e.g. Detragiache et al., 2008).

Apart from FDI, remittance inflows have also been analysed in a limited number of empirical papers, which report contradictory results. On the one hand, Funkhouser (1992) finds that remittances have a positive effect on self-employment of non-migrants, and Korosteleva & Mickiewicz (2011) show that they are associated with higher volume

of total finance and individual's own finance used to start a new business. On the contrary, Amuedo-Dorantes & Pozo (2006) prove that remittances do not promote entrepreneurship despite their potentially important role as a source of capital for business investments.

To fill in the gap in the literature, this paper aims to create a theoretical framework showing the possible direct and indirect channels of influence between different types of financial integration and nascent entrepreneurship, as well as to provide an empirical evidence of these linkages. Unlike previous studies, we investigate five types of asset categories which are components of international capital flows: foreign direct investment, portfolio investment, offshore bank loans, remittances, and trade credit. FDI is further divided into MNEs entry and foreign bank presence. We also analyse the impact of relaxing capital account restrictions, a measure of *de jure* FI. It is particularly important to differentiate the potential effects of *de jure* FI from those of *de facto* FI as the more recent research by Jinjarak et al. (2013) has shown that capital controls have little effect on international capital flows. However, we believe that *de jure* FI alone can have strong disciplining effects on the economy, which in turn can affect nascent entrepreneurs, independently of changes in international capital flows. Moreover, we also consider the possible positive moderation effect of trade openness suggested by the private interest theory of financial development (Rajan and Zingales, 2003), which can alter the relationship between financial integration and entrepreneurship.

We further contribute to the literature by focusing on nascent entrepreneurs, who can potentially benefit from foreign capital the most due to their high demand for and the difficulty in securing external financing. The motivation behind starting a business is also accounted for by grouping individuals into necessity-driven (i.e. starting a business out of necessity) and opportunity-driven (i.e. starting a business due to an entrepreneurial opportunity). By identifying different effects of FI on the two types of nascent entrepreneurs, we also expect to be able to disentangle the effects of FI on entrepreneurships in ways that can potentially explain the conflicting results reported in the literature. Furthermore, opportunity-driven nascent entrepreneurship is more likely to become productive entrepreneurship in Baumol (1996)'s sense, which positively contributes to the economy. As the poor with low levels of education, resources and social capital can engage in entrepreneurial activity due to the lack of alternative occupation, it can also be argued that necessity-driven entrepreneurship reduces short-term poverty⁴⁰. However, poor entrepreneurs often operate in environments with unreliable institutions (Wood, 2003; Berner et al., 2008) and hence, they are likely to be

⁴⁰ Amoroso and Cristi (2011) shows empirically that necessity-driven entrepreneurship reduces short-term poverty, measured by the HDI.

informal and survival entrepreneurs (de Soto,1989). As a result, they are less likely to engage in productive entrepreneurial activities. The existing literature seems to be in consensus that higher rate of opportunity-driven entrepreneurship is more desirable than necessity-driven entrepreneurship (e.g. Acs et al.,2005; Amoroso and Cristi, 2011). Therefore, determining types of FI, as well as channels of influence, that benefit this type of entrepreneurs should have particularly important implications for policy makers.

The paper is structured as follows. The theoretical framework, which shows how different types of financial inclusion affect necessity- and opportunity-driven nascent entrepreneurs, and relevant hypotheses are presented in Section 3.2. The data and methodology used in this study are provided in Section 3.3. The empirical results are reported in Section 3.4, followed by robustness checks in Section 3.5. Section 3.6 concludes.

3.2. Theoretical framework and hypotheses

By reconciling and expanding the existing theories, this section presents a theoretical framework which shows potential direct and indirect channels through which different types of capital flows, as well as financial liberalization, can affect necessity- and opportunity-driven nascent entrepreneurship. We only investigate capital *inflows* of different asset categories as they are more likely to have a significant impact on entrepreneurs, and thus have been the focus of previous literature on the subject. The only exception is trade credit, where both inflows and outflows are considered, as we believe that both directions of flows have important effects on nascent entrepreneurship through international trade.

3.2.1. FDI

We first consider the foreign enterprises entry, defined as an investment to purchase a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor, into non-financial sector. The potential effects of such enterprises (denoted as MNEs throughout this paper) on necessity- and opportunity-driven nascent entrepreneurs are graphically presented in Figure 16. Overall, we have identified three channels through which MNEs can affect nascent entrepreneurs, namely: labour market, product market, and spillover effects. They are described in detail below.

3.2.1.1. *Labour and product market effects*

Entrepreneurship has traditionally been studied within occupational choice models, which assume that individuals can choose between entrepreneurship and paid

employment based on the expected utility offered by the two occupations (Parker, 2018). One of the most important models in the context of FDI-entrepreneurship relationship was developed by Grossman (1984), which shows that in an open developing economy an individual becomes an entrepreneur if the following condition is met:

$$E\{[pF(l_z^i, \alpha^i) - wl_z^i]^{1-\gamma}\} \geq w^{1-\gamma} \quad (3)$$

On the left-hand side, there is an expected utility of an entrepreneur, where p is a non-stochastic price, $F(l_z^i, \alpha^i)$ is an output of the i^{th} enterprise, which is a positive function of labour producing an industrial output z hired by the i^{th} enterprise (l_z^i) and a random variable α^i , w is a competitive wage paid to all labour⁴¹ and hence wl_z^i is a cost of labour, γ is the Arrow-Pratt measure of relative risk aversion. On the right-hand side, there is utility derived from the risk-free wage earned by a labourer.

According to Grossman (1984), an inflow of foreign enterprises has a crowding out effect on local ventures through labour market. It is assumed that foreign-owned establishments provide income insurance which attracts workers and foreign firms have an infinitely elastic supply of labour at the real wage w determined by equation (3). As a result, labour input of enterprises, l_z^i , declines, causing a shift in the occupational distribution. This is, the supply of domestic entrepreneurs must shrink to release individuals needed to meet the foreign firms demand for workers.

In the Grossman (1984) model, FDI does not alter wages because of the infinitely elastic labour supply in developing countries. However, it has been observed that foreign firms usually possess better technology and capital-intensive production process compared to domestic companies, making workers more productive (De Backer and Sleuwaegen, 2003). As a result, foreign firms tend to offer higher wages than domestic firms, creating a dual labour market (Dunning, 1993). The increase in wages, similarly to income insurance mentioned in Grossman (1984), decreases labour input to domestic firms, l_z^i , leading to the crowding out of local ventures and lower supply of domestic entrepreneurs. Furthermore, the lower labour input in domestic enterprises l_z^i in conjunction with higher labour wage w leads to a weak rise, or even a fall, in entrepreneurial income (left side of equation (3)). Hence, labour wage offered by an alternative occupation (right-hand side of equation (3)) is higher than the expected entrepreneurial income, causing individuals to choose paid employment over entrepreneurship.

⁴¹ Labour is assumed to be perfectly mobile between firms and sector.

The Grossman (1984) model can be used to illustrate how FDI can affect necessity- and opportunity-driven nascent entrepreneurship differently. The potential necessity-driven nascent entrepreneurs do not have an alternative occupation⁴² and hence their selection into entrepreneurship is dictated by:

$$E\{[pF(l_z^i, \alpha^i) - wl_z^i]^{1-\gamma}\} \geq 0 \quad (4)$$

In other words, an individual decides to become a necessity-driven entrepreneur if the expected entrepreneurial income is not negative. The entry of foreign firms, accompanied by job creation, gives them a choice between entrepreneurship and paid employment which they did not have before the MNEs entry (i.e. equation (4) now turns into equation (3)). In this case, if they still decide to become entrepreneurs because of higher expected entrepreneurial income compared to paid employment offered by foreign firms, they become opportunity-driven nascent entrepreneurs. On the other hand, if they decide to accept a new job offer with foreign firms, they become paid employees. Hence, foreign firms' entry reduces necessity-driven entrepreneurship through job creation.

However, MNEs entry, usually through merger and acquisitions, can lead to restructuring of previously domestic firms and job reduction. As the result, the redundant employees, especially low-skilled ones, could become necessity-driven entrepreneurs due to a difficulty in finding alternative employment.

Other labour market effects, namely a lower supply of labour to domestic enterprises and higher labour wages, directly decreases opportunity-driven nascent entrepreneurship. In essence, the lower labour output l_z^i and higher labour wage w cause a fall in expected entrepreneurial income, which forces potential opportunity-driven nascent entrepreneurs to choose paid employment as the condition in equation (3) will no longer hold. The necessity-driven nascent entrepreneurs, on the other hand, are less likely to be affected as they still face an alternative paid employment income of 0 (equation 4) and hence the lower, but still positive, expected entrepreneurial income is still a better outcome than the alternative. However, in the extreme case when the negative effects of lower labour supply and higher labour wages are so high that the expected entrepreneurial income becomes negative, necessity-driven entrepreneurship is also reduced.

⁴² For the sake of simplicity, we assume that a potential necessity-driven individual does not have a paid employment. In reality, an individual can have a full-time or part-time work, which is so low-paid that does not allow them to meet basic needs. In this case, the utility derived from paid employment is also 0 and the condition in model (2) still holds.

Another occupational choice model developed by Jovanovic (1994), which is useful in the context of necessity and opportunity-driven entrepreneurship, stresses the importance of managerial/entrepreneurial skills and paid worker ability⁴³. Unlike the previous models (3) and (4), risk profile of an individual is not accounted for. In this model, the selection into entrepreneurship is governed by the following:

$$\pi(x; w) \geq wy \quad (5)$$

Where $\pi(x; w)$ on the left side is entrepreneurial profit, which is positively related to managerial skills x and inversely related to labour wage w . On the right-hand side, wy is paid worker income which is a product of labour wage and worker's ability. If the condition in (5) is met, an agent with managerial skills x and paid worker ability y decides to be an entrepreneur.

De Backer and Sleuwaegen (2003) has applied Jovanovic's (1994) model to an open economy. They state that the best (potential) domestic entrepreneurs prefer to become managers/workers in foreign firms, which not only offer higher wages than domestic firms but also additional benefits to talented workers. In other words, the best potential entrepreneurs with high paid worker ability y , who are offered a wage higher than labour wage w in domestic firms, are worse off if they decide to become entrepreneurs as the condition in equation (5) will not hold. Since individuals with the best managerial/entrepreneurial skills are more likely to become opportunity- than necessity-driven entrepreneurs, Jovanovic's (1994) model shows that foreign firms' entry reduces opportunity-driven nascent entrepreneurship.

The labour market effects described so far indicate that foreign firm entry causes a reduction opportunity-driven entrepreneurship, but their effect on necessity-driven entrepreneurship is ambiguous. While Grossman (1984) does not anticipate that FDI can affect entrepreneurship through the product market effect, many researchers point out that FDI can create additional competition (e.g. Markusen and Venables, 1999; Gorg and Strobl, 2002), which in turn leads to an increase in total output and a decrease in market price p in equation (1). As a result, an expected entrepreneurial profit falls, reducing a number of opportunity-driven nascent entrepreneurs. According to equation (4), the necessity-driven entrepreneurs are negatively affected only if the prices fall so low that their expected entrepreneurial profit becomes negative.

The occupational choice models clearly indicate that FDI can reduce both necessity- and opportunity-driven entrepreneurship through labour and product market effects. The

⁴³ The first occupational choice model with heterogeneous abilities was developed by Lukas (1978). It was later expanded by Jovanovic (1994).

labour effect can increase necessity-driven entrepreneurs only when MNEs destroy jobs in newly acquired domestic firms. Hence, the following hypotheses can be developed:

H1a(b). Multinational enterprises entry reduces (increases) the possibility of becoming necessity-driven entrepreneur.

H2a. Multinational enterprises entry reduces the possibility of becoming opportunity-driven entrepreneur.

3.2.1.2. *Spillover effects*

FDI can also have spillover effects which take place when “the entry or presence of multinational corporations increases the productivity of domestic firms in a host country and the multinationals do not fully internalize the value of these benefits” (Javorcik, 2004, p. 607). The knowledge spillover theory of entrepreneurship, developed by Acs et al. (2009) and applied to FDI by Acs et al. (2007), provides insight how FDI can affect entrepreneurship through spillovers. The model’s assumption is that there are two types of firms in the economy that can introduce innovative products: incumbents undertaking R&D and start-ups exploiting knowledge spillovers and existing stock of knowledge. According to this model, the entrepreneurial choice is dictated by the following:

$$E = \mu(\pi^*(K^\theta) - w)/\beta \quad (6)$$

Where E is a decision to become a knowledge-based entrepreneur (expressed as probability), π^* is expected entrepreneurial profit, K^θ is knowledge opportunities, where K is aggregate stock of knowledge and θ is share of knowledge not exploited by incumbents⁴⁴, w is wage earned from employment in an incumbent enterprise, μ are all other variables that affect entrepreneurship, and β are institutional and individual barriers to entrepreneurship. The main implication of equation (6) is that an increase in knowledge stock K positively affects entrepreneurship⁴⁵, but its magnitude is determined by incumbents’ efficiency to exploit knowledge (θ). This is, the more efficient the incumbents are (the lower θ), the smaller the impact of knowledge on entrepreneurship.

According to the definition of opportunity-driven entrepreneurship adapted in this paper, if an individual decides to become an entrepreneur to take advantage of knowledge opportunity, he/she is an opportunity-motivated entrepreneur. Hence, the knowledge spillover theory of entrepreneurship can be used to explain the linkage between FDI and

⁴⁴ $0 < \theta < 1$

⁴⁵ The empirical literature has found evidence of such knowledge spillover effects (e.g. Aitken and Harrison, 1994; Kokko and Blomstrom, 1995).

opportunity-driven entrepreneurship. The entry of foreign firms, which tend to be technologically more advanced than domestic enterprises, can increase the knowledge stock in the economy. As shown in equation (6), higher knowledge stock K rises the probability of becoming a knowledge-based entrepreneur. From the occupational choice model perspective, an increase in knowledge opportunities created by MNEs rises expected entrepreneurial income. As a result, more individuals are attracted into opportunity-driven entrepreneurship as they would be worse off if they stayed in paid employment.

The knowledge spillover theory of entrepreneurship explains how FDI can have a positive spillover effects on business entry both within the same industry, referred to as “horizontal spillovers” in the literature, and within the related industries up and down the production chain, called “vertical spillovers”. As explained by Javorcik (2004), domestic firms can copy technologies of foreign affiliates operating in the same sector through observation or by hiring workers trained by the affiliates. Furthermore, MNEs in final goods sector (downstream industries) can directly transfer knowledge to local suppliers (upstream industries) so that they could benefit from the improved performance of intermediate goods sector. Such contacts between MNEs and their local suppliers is called “backward linkages”.

Vertical spillovers can manifest itself through other channels as well. As shown by Markusen and Venables (1999), foreign firms’ entry to final goods sector also increases demand for local intermediate goods through backward linkages. As a result, new business opportunities arise in the intermediate goods sector, boosting opportunity-driven entrepreneurship. MNEs entry to an upstream industry, on the other hand, causes a reduction of intermediates goods prices, which through “forward linkages” benefits downstream industries. The decrease in intermediates goods prices rises expected entrepreneurial income in final goods sector, which in turn increases opportunity-driven entrepreneurship. Thus, foreign firms’ entry to both intermediate and final goods sector should encourage new opportunity-driven business entries.

Based on the analysis of possible spillover effects of MNEs entry above, the following hypothesis can be drawn:

H2b. Multinational enterprises entry increases the possibility of becoming opportunity-driven entrepreneur.

3.2.1.3. Foreign bank presence

We now turn to analysing potential effects of FDI inflows into the banking sector, namely the foreign banks entry. These effects are graphically shown in Figure 16, and are namely: lower cost of capital, higher competition in banking sector, and cream-skimming practice.

Proponents of foreign banks believe that these banks can have a direct and positive effect on informationally opaque or soft-information borrowers who are unable to provide hard information (e.g. bank statements) and/or usable collateral, including potential entrepreneurs and start-ups. Foreign banks, backed by their parent banks, are perceived to have better risk diversification and economies of scale (Detragiache et al., 2008), which in turn allows them to operate with lower bank spreads⁴⁶, and to offer loans to opaque borrowers with good expected profitability. Furthermore, foreign banks can be less affected by political pressure and hence, reduce related lending (Rajan & Zingales, 2003; Giannetti and Ongena, 2009). In closed and under-developed financial systems, where the dominating players are mainly state-owned or politically-connected banks, capital can be easily available to a group of connected firms and individuals⁴⁷, but it does not percolate outside. Therefore, the entry of foreign banks can reduce these practices, making capital available to borrowers outside of the connected group, such as potential entrepreneurs with good profit prospect.

Dell'Ariccia and Marquez (2004) develop a model which shows that foreign bank entry can also benefit soft-information borrowers indirectly through financial development⁴⁸. In their model, private information obtained by banks generates a lender-client exclusivity as it cannot be credibly given to outside lenders. Hence, the informed lenders' informational advantage causes borrower capture as the latter face difficulty in obtaining credit from outside lenders. When foreign banks enter the market, they increase competition in the banking sector and take over borrowers for whom informational disadvantages are smaller, such as large companies that can provide hard information. However, in sectors with high information asymmetry, foreign banks become outside lenders with worse information and hence, they face difficulty in assessing the quality of

⁴⁶ Peria and Mody (2004), for example, finds empirically that foreign banks, especially de novo banks, charge lower interest margins relative to domestic banks in Latin America during the late 1990s.

⁴⁷ Sapienza (2004) and Mian (2006), for example, find that state-owned banks are often motivated by political considerations. La porta et al. (2003) find that Mexican banks, which operate in a relatively closed financial system, issue larger loans at lower cost to connected firms.

⁴⁸ Following Rajan & Zingales (2003), financial development is defined as "the ease with which any entrepreneur or company with a sound project can obtain finance, and the confidence with which investors anticipate an adequate return. A developed financial sector can gauge, subdivide and spread difficult risks [...] at low cost" (p. 9).

more captive borrowers, such as soft-information potential entrepreneurs. Therefore, when faced with higher competition caused by foreign banks, informed domestic banks shift their capital allocation towards more captive, but also more profitable⁴⁹, borrowers, which Dell’Ariccia and Marquez (2004) refer to as *flight to captivity*. Domestic banks can, for example, improve their risk management techniques and rely more on soft information when assessing loans applications. As a result, credit becomes available to nascent entrepreneurs who might have been neglected by domestic lenders before the foreign banks entry.

The effects of foreign bank presence analysed so far allow to draw the following hypotheses:

H3a. Foreign banks presence increases the possibility of becoming necessity-driven entrepreneur.

H4a. Foreign banks presence increases the possibility of becoming opportunity-driven entrepreneur.

Foreign banks are believed to possess advanced technology, better supervision and regulation, which allow them to better monitor hard information than domestic banks. However, critics of foreign banks point out that lending to soft-information borrowers is local in nature (Detragiache et al. 2008). Foreign banks, usually large and complex organizations with headquarters often in geographically distant locations, have difficulty in acquiring soft information due to the lack of direct and repeated interaction with lenders (Clarke et al., 2006). In their theoretical model, Detragiache et al. (2008) show that, for some parameter configurations, soft information borrowers are never better off and are sometimes worse off following foreign banks entry. The explanation for this occurrence, as they note, lies in the cream-skimming practice of foreign banks, whereby soft information borrowers are separated from hard information lenders and are put in a worse pool. As a result, informationally opaque borrowers face such high cost of borrowing that they are discouraged from using formal financing.

The cream skimming model indicates that nascent entrepreneurs are directly and negatively affected by foreign banks practices. However, to the best of our knowledge, none of the existing theoretical nor empirical papers has recognized potential *indirect* effects steaming from cream-skimming practices of foreign banks. This is, cream-skimming can lead to the growth of established businesses, which in turn can affect entrepreneurs in a similar fashion to MNEs presence. As established domestic

⁴⁹ The bank loan spreads are high in markets subject to higher information asymmetry so that informed lenders can profitably finance more captive, less creditworthy borrowers.

businesses can provide hard information sought-after by foreign banks, the most prospective of them can enjoy access to capital at lower cost. The resulted growth of established businesses can directly reduce necessity- and opportunity-driven nascent entrepreneurship through labour and product market effects. In relation to labour market, they can create new jobs and increase wages, reducing both necessity- and opportunity-driven entrepreneurship. Regarding product market, they can use additional capital to improve production efficiency, causing a decrease in goods prices and negatively affect both types of nascent entrepreneurs. Other effects of established business growth are horizontal and vertical spillovers. The injection of capital provided by foreign banks can allow established businesses to invest in R&D, which in turn can benefit firms within the same industry and along the production line through knowledge spillovers. The growth of established firms can also benefit related industries through backward and forward linkages. Therefore, the foreign banks' cream-skimming practices can directly and indirectly hurt necessity-driven nascent entrepreneurship, but their negative direct effects on opportunity-driven entrepreneurship can potentially be counter-balanced or outweighed by positive indirect effects. As a result, in addition to H3a and H4a, the following hypotheses can be created:

H3b. Foreign banks presence reduces the possibility of becoming necessity-driven entrepreneur.

H4b. Foreign banks presence reduces the possibility of becoming opportunity-driven entrepreneur.

3.2.2. Portfolio investment and cross-border bank lending

Portfolio investment consists of equity securities, other than FDI, and debt securities that are either publicly issued through stock exchanges or privately issued. Unlike FDI, portfolio equity investment provides ownership without control of domestic firms as decision making is delegated to managers with potentially different agenda (Goldstein & Razin, 2006). Portfolio debt investment, on the other hand, does not give ownership rights. Offshore/cross-border bank lending (also called loans from non-resident banks) are debt products issued by offshore banks located typically in a low tax jurisdiction (or tax haven) that provides financial and legal advantages (World Bank WDI, 2017). The channels through which portfolio investment and offshore bank lending could affect nascent entrepreneurs are shown in Figure 17.

As mentioned in Chapter 2, both portfolio investment and cross-border bank lending are an easily reversible type of capital flows. Hence, their sudden reversal can lead to financial crisis in capital-recipient countries. Needless to say, financial crisis can have a

detrimental effect on both necessity- and opportunity-driven entrepreneurs by, for instance, (1) slowing down economic activity (i.e. lower demand for entrepreneurs' products and services), (2) lower supply of bank loans to non-financial firms (see the lending supply shock theory described in Section 1.8.1 in Chapter 1). As a result, the following hypotheses can be developed:

H5a. Portfolio investment inflows reduces the possibility of becoming necessity-driven entrepreneur.

H6a. Portfolio investment inflows reduces the possibility of becoming opportunity-driven entrepreneur.

H7a. Loans from non-resident banks reduces the possibility of becoming necessity-driven entrepreneur.

H8a. Loans from non-resident banks reduces the possibility of becoming opportunity-driven entrepreneur.

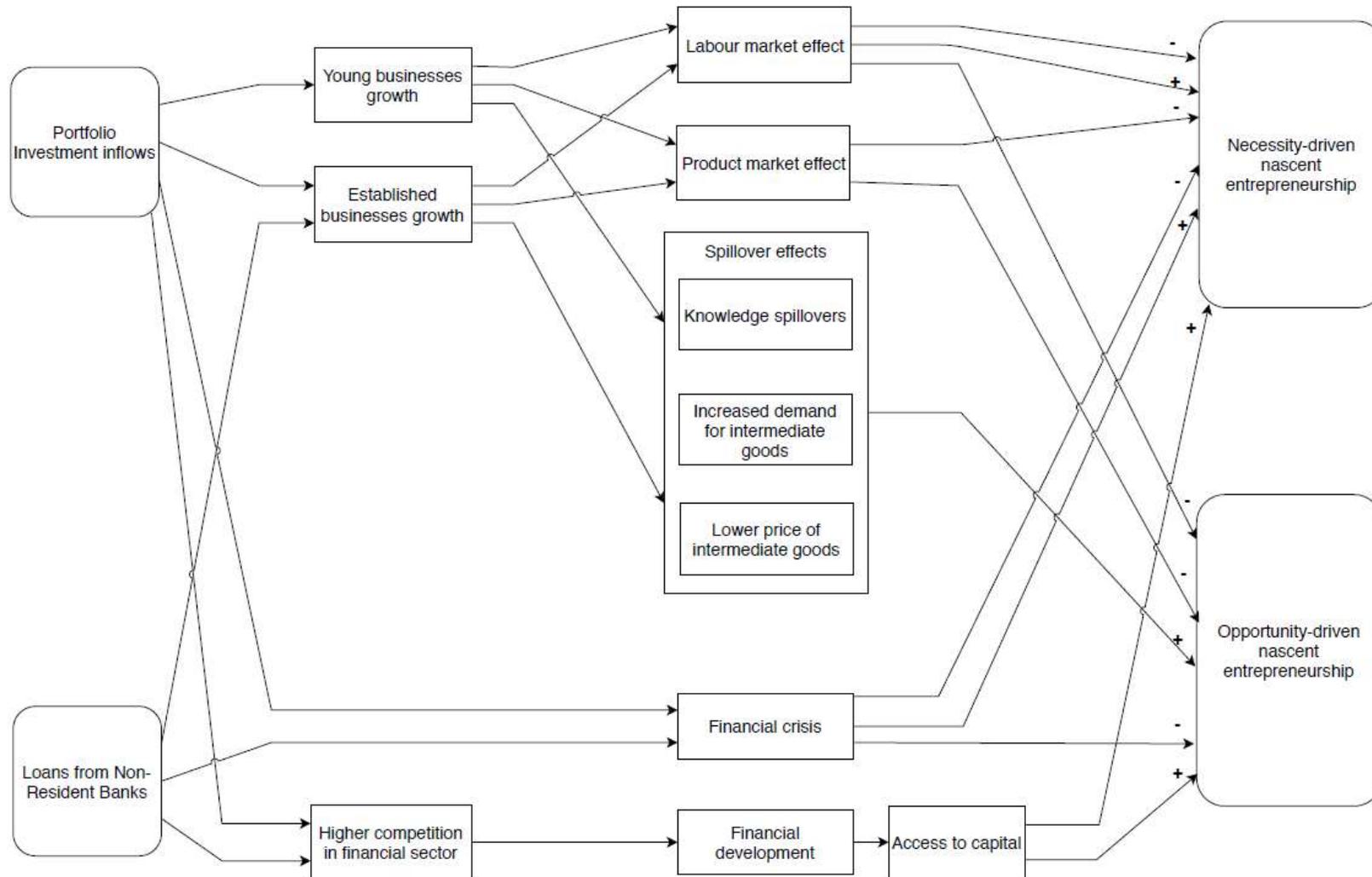
Financial crisis can also negatively affect the performance of existing firms, leading to jobs destruction. Consequently, redundant employees might be forced to undertake entrepreneurial activities, which function is to provide basic income support. In other words, financial crisis may push people to become necessity-driven entrepreneurs. Thus, the alternative hypotheses can be created:

H5b. Portfolio investment inflows increases the possibility of becoming necessity-driven entrepreneur.

H7b. Loans from non-resident banks reduces (increases) the possibility of becoming necessity-driven entrepreneur.

As it is the nature of foreign portfolio investment to invest in existing firms, it is unlikely to be a source of finance for nascent entrepreneurs. However, it can affect these entrepreneurs indirectly by providing capital to established firms. As a result, a growth of established firms can impact necessity- and opportunity-driven nascent entrepreneurs through the mechanisms described in the previous section: labour market effect, product market effect, and knowledge spillovers. Furthermore, portfolio investors can provide equity funding to young firms by acquiring their shares on a sub-market of stock exchanges, designed to help smaller firms access capital (e.g. Alternative Investment Market in the UK, NewConnect in Poland). Consequently, the growth of young firms affects necessity- and opportunity-driven nascent entrepreneurs in the same manners as established firms' growth. Finally, portfolio investment is an alternative for domestic

Figure 17. Effects of portfolio investment and offshore loans inflows on nascent entrepreneurship.



bank loans, which, as in the case of foreign banks presence, increases competition in the financial sector. Following Dell’Ariccia and Marquez (2004) reasoning, higher competition pushes domestic banks towards soft-information borrowers (flight to captivity), benefiting nascent entrepreneurs. Therefore, the following hypothesis can be added to the set of hypotheses already defined above:

H6b. Portfolio investment inflows increases the possibility of becoming opportunity-driven entrepreneur.

Similarly to foreign banks in domestic country, offshore banks suffer from information asymmetry, which leads them to issue loans to hard-information borrowers, usually well-established firms, only. This is described as cream-skimming practices in Section 3.2.1.3. Hence, offshore banks can affect nascent entrepreneurs indirectly through established firms’ growth. However, offshore banks are competitors to domestic credit providers, pushing domestic banks’ capital allocation towards soft-information borrowers (i.e. flight to captivity), benefiting nascent entrepreneurs. As a result, the following hypotheses can also be tested:

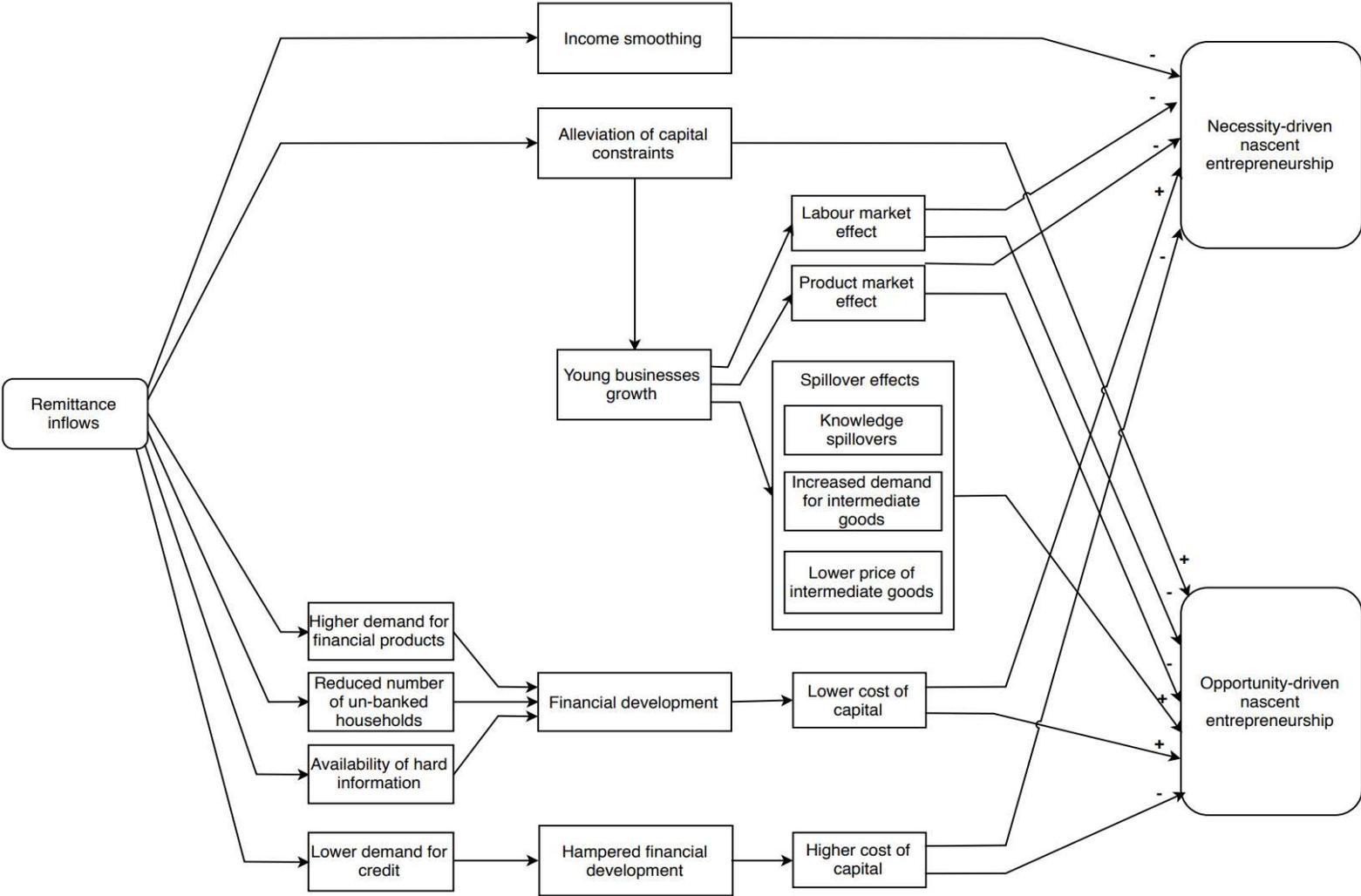
H8b. Loans from non-resident banks increases the possibility of becoming opportunity-driven entrepreneur.

3.2.3. Remittances

Remittances sent by individuals living outside their countries of birth to their relatives remaining home are important type of international financial flows, especially in developing countries (e.g. Shapiro & Mandelman, 2016; Yang, 2008). The existing literature has highlighted three effects of remittances: income smoothing, start-up financing, and financial development. These effects are used in this section to show the mechanisms through which remittances influence two types of entrepreneurship: necessity- and opportunity-driven nascent entrepreneurship. The mechanisms are summarized graphically in Figure 18.

Remittances have been found to be countercyclical in many recipient countries, which help households with migrant members smooth income shocks caused by recessions or environmental risk factors such as weather (e.g. Amuedo-Dorantes and Pozo, 2011; Yang and Choi, 2007). In other words, remittances can act as insurance in times of negative income shocks, smoothing households’ consumption over the business cycle. In fact, a model developed by Shapiro and Mandelman (2016) shows that countercyclical remittances limit the contraction in consumption after a downturn. As a result, Yang and Choi (2007) suggest, remittances may reduce households’ need to find alternative

Figure 18. Effects of remittance inflows on nascent entrepreneurship.



income sources. Looking at this from a potential entrepreneur's perspective, the income provided by remittances increases opportunity cost of entrepreneurship. If an individual still decides to become an entrepreneur, it is most likely that he/she wants to exploit a business opportunity, not because there are no better alternatives. On the contrary, prospective necessity-driven entrepreneurs now have an alternative source of income in the form of remittance inflows and hence, they do not have to become entrepreneurs to smooth consumption of their households. It is, therefore, expected that remittance inflows reduce necessity-driven entrepreneurship through income smoothing, leaving opportunity-driven entrepreneurship unaffected.

Apart from the income smoothing effect, remittances have been found to be a source of start-up financing. Yang (2008), for example, shows that a positive income shock in the form of increased remittance inflows has large effects on various types of household investments, such as education (investment in human capital) and entrepreneurship. He finds that migrant households are more likely to start relatively capital-intensive household enterprises, such as communication services and manufacturing. Shapiro and Mandelman (2016) also suggest that countercyclical remittances provide additional funds needed to finance the start-up costs at the outset of recession. Korosteleva and Mickiewicz (2011) also report a positive effect of remittances on total volume of start-up financing. From a potential entrepreneur's perspective, remittance inflows can be used to smooth consumption or to fund start-up cost. As explained above, prospective necessity-driven entrepreneurs are likely to use remittances for consumption smoothing. Opportunity-motivated nascent entrepreneurs, however, are likely to still pursue their business opportunities. Hence, in their case, remittances are used as additional start-up financing source. In short, remittance inflows are expected to increase opportunity-driven nascent entrepreneurship by providing start-up financing.

Remittances can also alleviate capital constraints in small and young enterprises. Woodruff and Zenteno (2007), for example, find that migration networks and the resulted remittance inflows are associated with higher investment level and higher profits in small-scale enterprises in Mexico. The growth of young businesses can directly and indirectly affect necessity- and opportunity-motivated nascent entrepreneurship through three channels described in the previous sections: labour market effect, product market effect, knowledge and forward/backward spillovers.

Nascent entrepreneurship can also be indirectly affected by remittances through financial development. Aggarwal et al. (2011) and Demirguc-Kunt et al. (2011) have highlighted a set of mechanisms through which remittances can improve or hurt financial development. First, remittances tend to be lumpy, which leaves households with excess

cash for some time. To keep this temporary excess cash safe, these households might increase demand for banking services (i.e., bank deposits), fostering banking outreach and depth. Moreover, banks can channel remittance deposits to previously unfunded or underfunded projects, improving credit market. Second, by offering remittance transfer services, banks can reach out to previously un-banked households, the main recipients of remittances, and offer them other banking services. Third, banks can collect information on the income of recipient households and use them to assess loan applications, reducing liquidity constraints of the otherwise opaque borrower and developing credit market. Forth, since remittances might help relax household and start-ups financing constraints, they can lead to lower demand for credit, which in turn hamper credit market development. However, Demircuc-Kunt et al. (2011) suggest that this negative effect can be offset if banks successfully channel remittance deposits to private sector⁵⁰. The increase in financial development, including capital market expansion and increased banking outreach and depth, is expected to lower the cost of capital, making capital available to necessity-driven and opportunity-driven nascent entrepreneurship.

Remittance inflows can have opposite effects on nascent entrepreneurship, depending on the channel of influence, and hence, the following hypotheses can be developed:

H9a(b). Remittance inflows reduces (increases) the possibility of becoming necessity-driven entrepreneur.

H10a(b). Remittance inflows reduces (increases) the possibility of becoming opportunity-driven entrepreneur.

3.2.4. International trade credit

While trade credit has been found to be, next to bank lending, the most important source of formal external financing for firms, especially during monetary policy shocks and business downturns (e.g. Carbo-Valverde et al., 2016; Huang et al., 2011), no attention has been paid to international flows of trade credit. This paper recognizes international trade credit flows as a type of financial integration, which affects nascent entrepreneurs through trade. The potential channels of influence are presented in Figure 19 and analysed below.

First, let us consider trade credit outflows, which occur when domestic firms repay trade credit issued by non-resident trade partners. Such outflows are associated with higher import of goods and competition in the product market, which according to Grossman (1984)'s occupational choice model, has an adverse effect on the supply of local

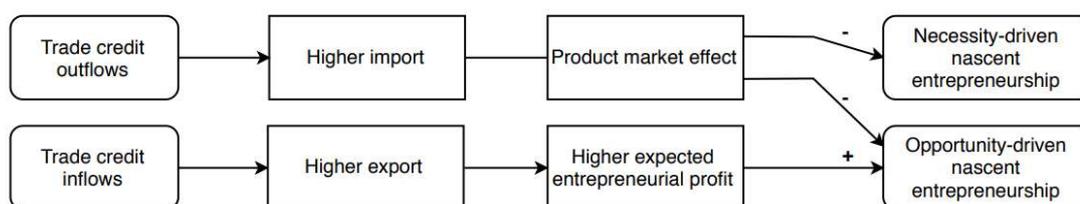
⁵⁰ Aggarwal et al. (2011)'s and Demircuc-Kunt et al. (2011)'s empirical results indicate that remittance inflows have positive effect on financial development.

entrepreneurs. This is, the additional competition increases total output and decreases market price, leading to lower expected entrepreneurial profit. Similarly to product market effect of FDI explained in Section 3.2.1, increased import reduces the number of necessity- and opportunity-driven nascent entrepreneurs, leading to the following hypotheses:

Hypothesis 11a(b). Trade credit outflows reduces the possibility of becoming necessity-driven (opportunity-driven) entrepreneur.

Trade credit inflows, on the other hand, are associated with higher export of goods. Having access to foreign goods market increases potential entrepreneurial output and profit, which in turn encourages more individuals to become entrepreneurs, according to occupational choice models in Section 3.2.1. If an individual is drawn into entrepreneurship by the higher expected profit, he/she becomes an opportunity-driven entrepreneur. Necessity-motivated nascent entrepreneurs, thus, should not be affected by the increased expected entrepreneurial profit as they are pushed into entrepreneurship by the lack of better alternative.

Figure 19. Effects of trade credit flows on nascent entrepreneurship.



Based on the analysis above on trade credit, the following hypotheses can be drawn:

Hypothesis 12a. Trade credit inflows has no effect on the possibility of becoming necessity-driven entrepreneur.

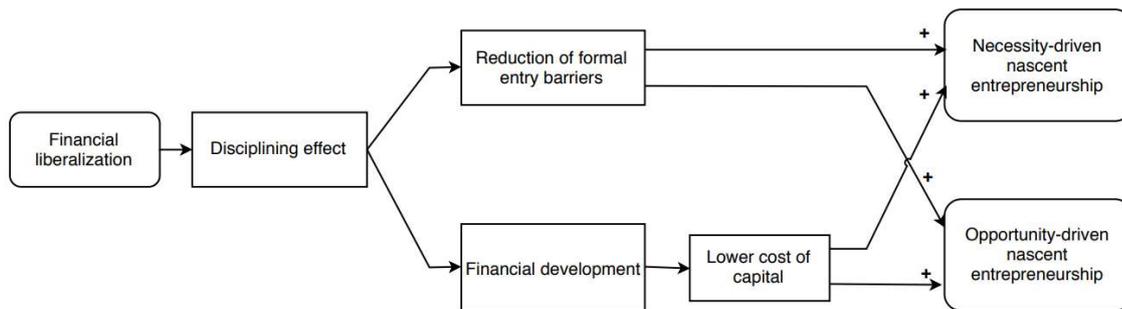
Hypothesis 12b. Trade credit inflows increases the possibility of becoming opportunity-driven entrepreneur.

3.2.5. Overall *de jure* financial integration

The common perception is that *de jure* financial integration (i.e. lifting capital controls on international flows) leads to *de facto* financial integration. However, the more recent research has shown that capital controls have little effect on international capital flows. Jinjarak et al. (2013), for example, find no evidence that increasing capital restrictions is effective in reducing capital inflows from mutual funds in Brazil. They report only weak

evidence that lifting capital controls modestly prevent further decline in capital inflows. The paper concludes that capital controls' role is limited to sending the signal regarding the government's larger intentions and sensibilities. Thus, it is important to differentiate the potential effects of *de jure* financial integration from those of actual capital flows analysed in the previous sections. These effects are shown graphically in Figure 20 and are described below.

Figure 20. Effects of financial liberalization on nascent entrepreneurship.



Apart from signalling government's intention suggested by Jinjark et al. (2013), lifting capital controls can play a strong disciplining role in the economy. *De jure* FI, for example, can affect entrepreneurship through improved local financial sector. Domestic banks, being aware that loosening capital account restrictions might lead to an entry of foreign players and higher competition, can be more motivated to shift their capital allocation towards opaque borrowers, a phenomenon called flight to captivity by Dell'Ariccia and Marquez (2004). As a result, more credit becomes available to nascent entrepreneurs. However, as the private interest theory of financial development by Rajan & Zingales (2003) suggests, financial openness might require the presence of trade openness to achieve financial development.

De jure financial integration can also lead to an improved domestic business environment. Government, expecting a higher foreign capital influx after relaxing capital restrictions, might be more willing to relax formal business entry barriers. In fact, Norback et al. (2014) prove that globalization, a part of which is financial openness, induces government to reduce entry fee for entrepreneurs. As they explain, in more open economies, foreign firm presence might crowd-out potential domestic entrepreneurs, decreasing marginal revenue from the entry fee for government. Furthermore, marginal revenues from lobbying contributions also fall as domestic incumbents are discouraged from lobbying for higher fees. This is caused by the fact that incumbents must compete with foreign players now, who are not affected by the fee. Furthermore, when high entry fee discourages domestic entrepreneurial innovation and entry, the expected reward to innovation increases for foreign firms, which in turn rises probability of foreign entry. In this case, incumbents are, again, discouraged from lobbying for high business entry fee.

The government also does not have an incentive to keep high entry fee as domestic entrepreneurs' probability to win innovation game with foreign firms is decreased, leading to reduced probability of collecting the fee. As a result, *de jure* FI pushes government to lower business entry fee, which in turn have positive effect on nascent entrepreneurs.

The hypotheses concerning *de jure* financial integration and necessity-driven nascent entrepreneurship are as follows:

Hypothesis 13a(b). Financial liberalization increases the possibility of becoming necessity-driven (opportunity-driven) entrepreneur.

3.2.6. Positive moderating effect of trade openness

When financial sector improvement consistently appears to be one of the channels of influence between various types of financial integration and nascent entrepreneurship, the private interest theory of financial development by Rajan & Zingales (2003) suggests that financial openness must be accompanied by trade openness to push for financial development. In the case of financial openness alone, they argue, industrial incumbents (i.e. established large industrial firms) can access foreign markets for funds but they do not have an incentive to do so. This is caused by the fact that in the absence of domestic⁵¹ or foreign competition in product market, they can fund new projects out of earnings or use collateral and prior reputation to borrow, which do not require a sophisticated financial system. Industrial incumbents, in fact, will be against financial development as better disclosure rules and enforcement reduce the importance of collateral and reputation, allowing new entries to compete away profits. Another interest group, financial incumbents, will also not push for financial development as it does not want to upset industrial incumbents, their most profitable clients, who can now get funding from foreign financial markets and institutions.

In the case of trade openness, Rajan & Zingales (2003) argue, foreign competitors are brought to domestic product markets, which reduces industrial incumbents' profits. As their internal cash flow decreases, they are forced to seek external financing to compete with new foreign firms in the domestic market and to pursue new opportunities in foreign product markets. Due to higher competition in the product market, the risk in lending and information requirements increase, making incumbent financiers reluctant to provide capital to not-so-healthy industrial incumbents on preferential terms as before. If the

⁵¹ It is unlikely that small domestic firms can get capital from foreign investors due to information asymmetry, which is in line with the cream-skimming theory, and hence financial openness alone cannot improve competition in the product market.

trade openness (higher competition in product market) is accompanied by financial openness (higher competition in financial market), incumbent financiers will be less able to build long-term relationship, through which they could have recovered investment. As a result, not-so-healthy industrial incumbents will push for financial development to improve their access to capital. Healthy industrial incumbents do not oppose financial development as they can always access domestic or foreign capital. Incumbent financiers, after losing some of their best clients to new foreign competitors, will also push for financial development (i.e. better disclosure and contract enforcement) so that they could get new clients among unborn or young industrial firms, which is in line with Dell’Ariccia and Marquez (2004) predictions.

This paper argues that it is important to examine how trade openness affect the intensity of the link between financial integration and entrepreneurship. We believe, following the private interest theory of financial development, that financial integration, both *de jure* and *de facto*, is more likely to improve local financial sector, and in turn benefit nascent entrepreneurs, if it is accompanied by trade openness. Empirically, we examine the positive moderating effect of trade openness on financial integration and nascent entrepreneurial activity by focusing on the types of asset categories that are expected to influence entrepreneurship through financial development, namely: foreign bank presence, portfolio investment flows, and loans from non-resident banks. We omit remittance inflows as its effect on financial development is less likely to depend on the degree of foreign competition in the domestic product market or the access of domestic firms to foreign product market. As a result, we will be testing the following hypotheses in the upcoming empirical part of this paper:

H14a(b). Foreign bank presence increases the possibility of becoming necessity-driven (opportunity-driven) entrepreneur when it is accompanied by trade openness.

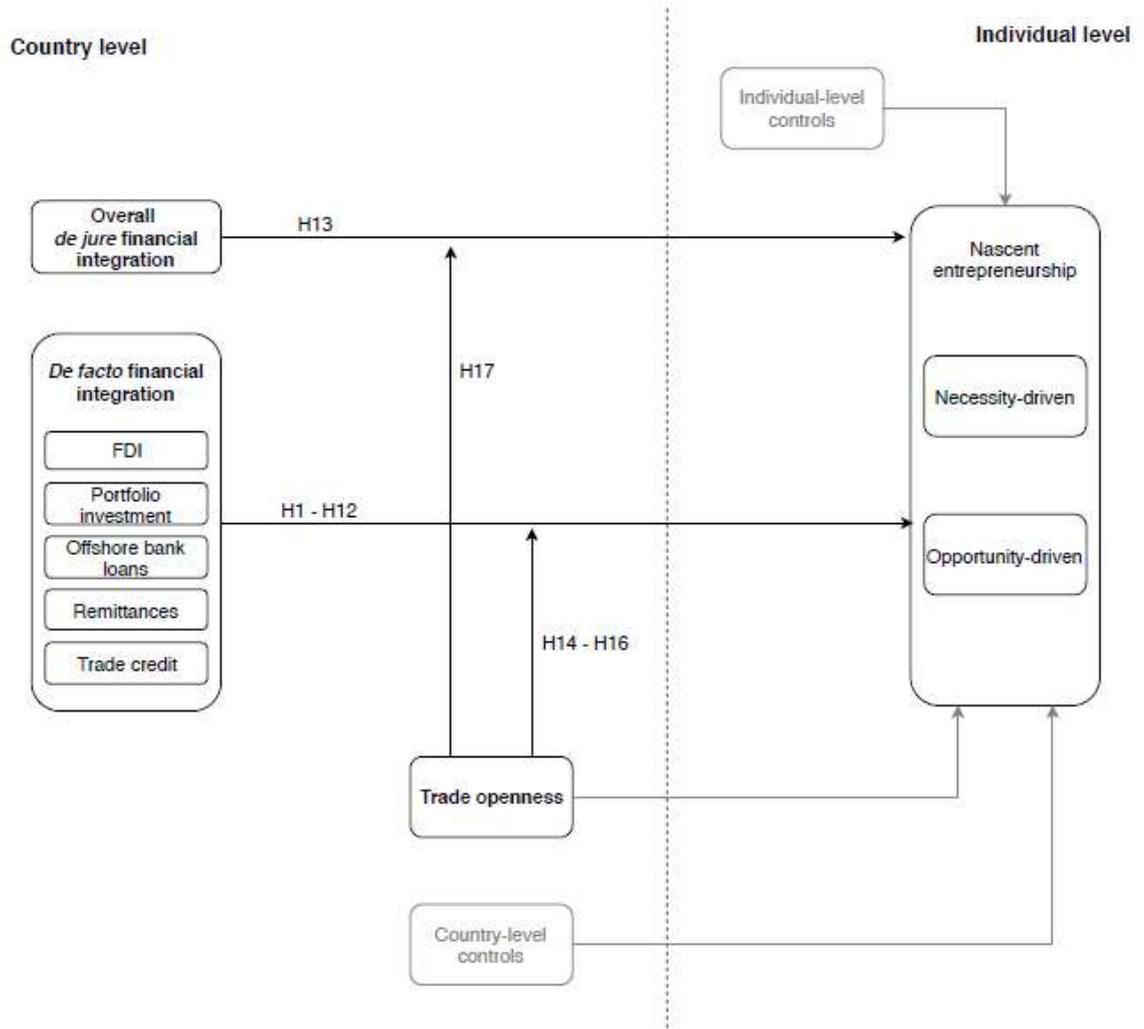
H15a(b). Portfolio investment inflows increase the possibility of becoming necessity-driven (opportunity-driven) entrepreneur when it is accompanied by trade openness.

H16a(b). Loans from non-resident banks inflows increase the possibility of becoming necessity-driven (opportunity-driven) entrepreneur when it is accompanied by trade openness.

H17a(b). Overall *de jure* financial integration increases the possibility of becoming necessity-driven (opportunity-driven) entrepreneur when it is accompanied by trade openness.

All hypotheses are summarized in Figure 21 and in Appendix F.

Figure 21. Research framework and hypotheses.



3.3. Data and methodology

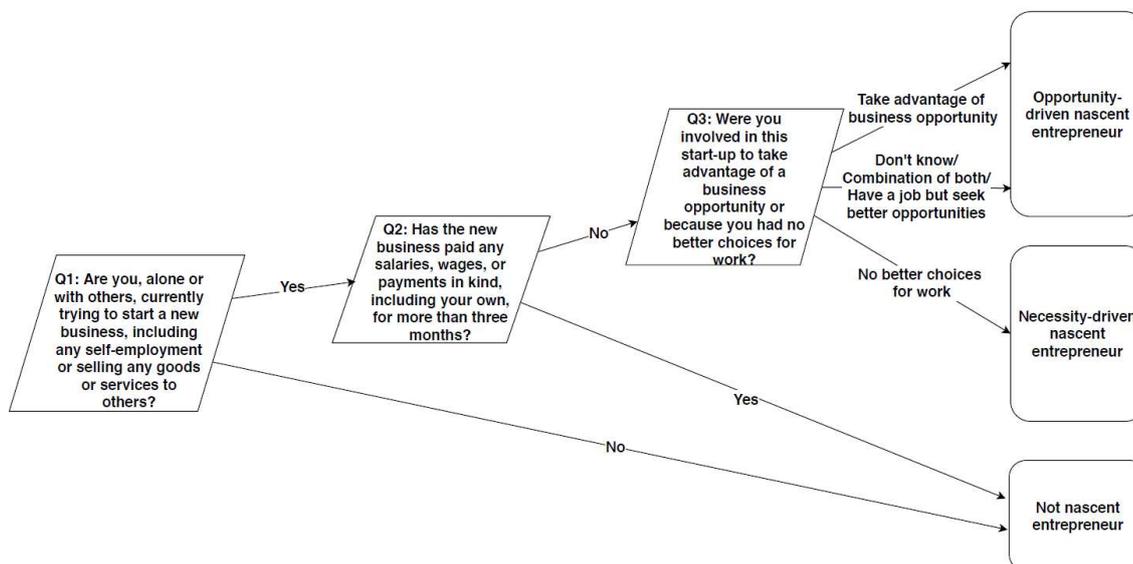
3.3.1. Dependent variable

For the purpose of this study, the data on individual-level entrepreneurial activities provided by the Global Entrepreneurship Monitor (GEM)'s Annual Population Survey (APS) is used to derive our dependent variable. This resource allows to clearly distinguish the motives behind one's decision to become an entrepreneur (i.e. necessity- vs. opportunity-motivated). We focus on nascent entrepreneurs, defined by the GEM as individuals involved in the start-up process who have not paid salaries for more than 3 months. As noted by Parker (2018), there are two advantages of focusing on nascent entrepreneurship instead of looking at the whole entrepreneurial population: the avoidance of "survival" and "hindsight" biases. The application of nascent entrepreneurship allows to see the impact of financial integration on on-going venture start-up efforts, excluding firms that have succeeded in creating new businesses. As a relatively small portion of aspiring entrepreneurs eventually set up a firm (Aldrich, 1999), focusing on nascent entrepreneurs reduces a survival bias. Furthermore, by analysing

data collected from entrepreneurs who are still involved in the new venture creation process, the risk of hindsight bias, which takes place when established entrepreneurs misreport career reasons due to memory loss or selective re-interpretation of events prior to start-up, is significantly reduced (Parker, 2018; Cassar, 2007). Hence, to accurately examine whether financial integration is a determinant of entrepreneurial activities, it is important to eliminate the hindsight and recall biases.

Following GEM's strategy, we classify individuals into a relevant type of nascent entrepreneurship based on their answers to the set of questions outlined in Figure 22. We have decided to put individuals who answered "Don't know/Combination of both/Have a job but seek better opportunities" to Q3 into opportunity-driven nascent entrepreneurs group. The motivation behind this is our belief that a necessity-driven entrepreneur should be fully aware that they are starting a business out of necessity⁵² and hence, should always select "No better choices for work" as an answer. Individuals who refused to answer any of the questions were excluded from the sample. As a result, our dependent variable is nominal with three categories: (1) not nascent entrepreneur, (2) necessity-driven nascent entrepreneur, and (3) opportunity-driven nascent entrepreneur. The categories are mutually exclusive and exhaustive.

Figure 22. Procedure to identify nascent entrepreneurs using the GEM data.



As the GEM research program, initiated in 1998, has been assembling relevant harmonized data on an annual basis across countries, it gives an opportunity to construct a relatively big sample of individuals in this study of nearly 500,000 observations over the period 2003-2013. Although the GEM's data are available from 1999, we have

⁵² We also run all regressions excluding this group of individuals from the sample as part of robustness checks and still obtain similar results.

chosen to use 2003 onwards as only then all relevant questions around entrepreneurship determinants, which we use as controls, were included in the APS questionnaires. Some of the questions also had gone through substantial changes before 2002, which further motivates us to drop the first 4 years of the GEM data.

3.3.2. Independent variables

To capture different types of financial integration described in the Theoretical Framework section, we use a combination of *de jure* (capital flow restrictions) and *de facto* (actual capital flows) measures outlined in Table 12. *De jure* measures come from the database compiled by Fernandez et al. (2015), based on data from the IMF's Annual Report on Exchange Rate Arrangements and Restrictions (AREAER). *De facto* measures come from 2 World Bank's databases: World Development Indicators (WDI), and Global Financial Development Database (GFDD). Both *de jure* and *de facto* measures cover 3 asset categories: direct investment, portfolio investment, and offshore loans. As data on actual trade credit flows is not available, we only use restrictions on trade credit inflows in our analysis. Analogically, there is no data on remittance inflow restrictions, so only actual remittance inflows are used.

In case of *de facto* measures, the higher value indicates greater financial integration. On the contrary, the higher value of *de jure* measures is associated with greater capital flow restrictions, which is opposite to financial integration. Hence, to align both types of measures, we have decided to reverse the original restrictions measures⁵³ so that their higher value could indicate greater financial openness. Additionally, while it is our intention to study inflows of different asset classes, apart from trade credits, no relevant *de facto* measures are available for portfolio investment and offshore loans. As shown in Table 12, the closest proxies that we use are their net flows, which is a difference between inflows and outflows. Regarding *de jure* measure for portfolio investment inflows, a reversed average of equity inflow restrictions and bond inflow restrictions is calculated and used in the analysis.

The correlation matrix in Table 13 indicates that there are no major correlations between financial integration measures. It is not surprising that the overall openness index is highly correlated with some of its components, such as portfolio investment inflow openness. Similarly, the high correlation between portfolio investment inflow openness

⁵³ As the original *de jure* measures have a range 0-1, we simply deduct their values from 1 to get the reversed measures.

Table 12. Financial integration measures.

FI type	Measure	Description	Source	Expected effect on NDNE	Expected effect on ODNE
<i>De jure</i> – overall restrictions	Overall restriction index (all asset categories)	Average of overall inflow restrictions index and overall outflow restrictions index for all asset categories. A continuous indicator ranging from 0 to 1.	Fernandez et al. (2015)	+	+
<i>De facto</i> - FDI	Foreign direct investment, net inflows (% of GDP)	Net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors.	WDI	?	?
<i>De facto</i> - FDI	Foreign banks among total banks (%)	Percentage of the number of foreign owned banks to the number of the total banks in an Economy. A foreign bank is a bank where 50 percent or more of its shares are owned by foreigners.	GFDD	?	?
<i>De jure</i> – portfolio investment	Portfolio investment inflow restrictions	An average of equity inflow restrictions and bond inflow restrictions. Equity inflow includes transactions involving shares and other securities of a participating nature if they are not affected for the purpose of acquiring a lasting economic interest in the management of the enterprise concerned. Bond inflow refers to bonds and other securities with an original maturity of more than one year. The term “other debt securities” includes notes and debentures. This series has a range from 0 to 1.	Fernandez et al. (2015), author's calculations	+	+
<i>De facto</i> – portfolio invest.	Portfolio investment, net (% of GDP)	Portfolio investment covers transactions in equity securities and debt securities. This series is a difference between inflows and outflows.	WDI	?	?
<i>De jure</i> – offshore loans	Financial credits inflow restrictions	Includes credits other than commercial credits granted by all nonresidents, including banks, to residents.	Fernandez et al. (2015)	+	+
<i>De facto</i> – offshore loans	Loans from non-resident banks (net, % of GDP)	Ratio of net offshore bank loans to GDP. An offshore bank is a bank located outside the country of residence of the depositor, typically in a low tax jurisdiction that provides financial and legal advantages.	GFDD	?	?
<i>De jure</i> – trade credit	Commercial credits inflow restrictions	Inflow of capital, which covers operations directly linked with international trade transactions or with the rendering of international services. A binary indicator where 1=full commercial credits inflow restrictions, 0=no restrictions.	Fernandez et al. (2015)	No effect	+
<i>De jure</i> – trade credit	Commercial credits outflow restrictions	Outflow of capital, which covers operations directly linked with international trade transactions or with the rendering of international services. A binary indicator where 1=full commercial credits outflow restrictions, 0=no restrictions.	Fernandez et al. (2015)	-	-
<i>De facto</i> - remittances	Remittance inflows (% of GDP)	A sum of 3 items defined in the IMF's Balance of Payments Manual, 5th edition: workers' remittances, compensation of employees, and migrants' transfers. Remittances are current private transfers from migrant workers resident in the host country for more than a year to recipients in their country of origin. Compensation of employees is the income of migrants who have lived in the host country for less than a year. Migrants' transfers are the net worth of migrants who are expected to remain in the host country for more than one year that is transferred from one country to another at the time of migration.	GFDD	?	?

Table 13. Correlation matrix of financial integration measures.

	Overall openness index	Direct investment inflow openness	FDI inflows (% of GDP)	Portfolio investment inflow openness	Portfolio investment net flows (% of GDP)	Financial credits inflow openness	Loans from non- resident banks net flows (% of GDP)	Trade credit inflow openness	Trade credit outflow openness	Remittance inflows (% of GDP)
Overall openness index	1.0000									
Direct investment inflow openness	0.6981	1.0000								
FDI inflows (% of GDP)	0.1567	0.1712	1.0000							
Portfolio investment inflow openness	0.8742	0.6099	0.1452	1.0000						
Portfolio investment net flows (% of GDP)	-0.0513	0.0210	-0.0314	-0.0290	1.0000					
Financial credits inflow openness	0.8594	0.5213	0.1437	0.6862	-0.0306	1.0000				
Loans from non-resident banks net flows (% of GDP)	0.2028	0.1055	0.1722	0.1717	-0.4118	0.1726	1.0000			
Trade credit inflow openness	0.6223	0.4204	0.0905	0.4442	-0.0297	0.6415	0.0730	1.0000		
Trade credit outflow openness	0.6581	0.3453	0.1110	0.4624	-0.0354	0.5570	0.0928	0.6210	1.0000	
Remittance inflows (% of GDP)	-0.1815	0.0434	0.0196	-0.1661	0.0316	-0.1657	-0.0452	-0.1998	-0.1841	1.0000

and its component, equity inflow openness, is not unusual and does not cause any problems as these two measures will be used interchangeably in the later analysis.

Interestingly, the capital account openness in all asset categories have relatively low correlation with relevant actual inflows. For example, openness on direct investment inflows has a correlation of 17.12% with FDI inflows. This could mean that government's efforts to lift capital flow restrictions does not necessarily bring the expected results of higher capital inflows. This means that it is meaningful to jointly analyse the effect of different types of financial integration on entrepreneurial activities, thus lending some credence to our hunch that they may have contradicting, or at least distinct, impacts.

3.3.3. Control variables

3.3.3.1. Individual-level controls

To avoid omitted variable bias, we include a set of individual-level controls, which capture the following individual characteristics: (1) demographics (age and gender), (2) psychological factors (fear of failure, and belief in possessing suitable skills), (3) human capital (education, discontinuation of business), (4) social network (knowing other entrepreneurs), (5) opportunity costs (work status). The full list of individual-level control variables, together with their definitions and expected effects on NDNE (necessity-driven nascent entrepreneurship) and ODNE (opportunity-driven nascent entrepreneurship), is provided in Appendix G.

In general, most individual characteristics are expected to have similar effects on necessity- and opportunity-driven entrepreneurs. There is substantial evidence in the literature showing that males are more likely to become entrepreneurs (e.g. Parker, 2004). The likelihood also increases with individual's age up to a certain point, called "golden age of entrepreneurship", after which it decreases (e.g. Bonte et al, 2009). To capture this inverted U-shaped relationship between age and entrepreneurial activity, both age and age-squared are used. Regarding psychological factors, fear of failure is expected to prevent entrepreneurial activity, while a belief in possessing suitable skills should boost the likelihood of becoming an entrepreneur. Fear of failure can be seen as an indicator of risk aversion, which together with skills, is shown to be important individual-level factors in the occupational choice models presented in the theoretical framework in Section 3.2. Specific human capital, which can be acquired through experience (Estrin et al., 2016), is captured by the discontinuation of business variable. It is expected to give access to necessary resources and lower transaction costs, which

in turn encourages setting up a new business. The similar effect is anticipated from having a relevant social network. While the lack of paid employment should clearly encourage necessity-driven entrepreneurship, the effect of full-time or part-time work is ambiguous. If the wage is satisfactory, an individual should be discouraged from starting up a new business. On the contrary, unsatisfactory pay, which does not allow to meet one's needs, can lead to higher likelihood of necessity-entrepreneurship. In the case of opportunity-driven entrepreneurship, having paid employment can help generate business-related skills, identify potential opportunities and gain access to various social networks (Kim et al., 2006). As a result, paid employment could encourage opportunity-motivated entrepreneurial activities.

The only control variable that is expected to have opposite effect on necessity- compared to opportunity- driven entrepreneurship is formal education, which is a proxy for general skills (Estrin et al., 2016). As noted by Kim et al. (2006), education can affect the likelihood of entrepreneurial entry through (1) the acquisition of skills, (2) credentialing (by providing access to certain social networks, e.g. alumni network), and (3) sorting people by ambition and assertiveness. Estrin et al. (2016) also point out that such investment in general human capital broaden one's knowledge base, allowing individuals to acquire new knowledge and adapt to new situations more easily. Education, hence, can help with spotting new business opportunities, especially in knowledge-based industries, such as technology or finance. On the contrary, higher education attainment can reduce the likelihood of starting a business out of necessity as it helps individuals to secure well-paid jobs, increasing the opportunity costs of entrepreneurship.

The correlation matrix shows that there is no high correlation (above 70%) between individual-level controls (see Appendix H) so there is no collinearity issue.

3.3.3.2. Country-level controls

On top of the individual-level controls described in the previous sub-section, we also use country-level controls to further minimize omitted variable bias. The literature suggests many factors that can affect country's entrepreneurial activities. The full list of country-level control variables used in this paper, their definitions and expected signs are shown in Appendix I. They are loosely grouped into the following categories: (1) economic factors, (2) financing opportunities, (3) institutions (formal and informal), (4) trade, (5) labour education, and (6) industry composition.

Among economic factors, Wennekers et al. (2005), for example, show that economic development has a U-shaped relationship with nascent entrepreneurship. Estrin et al. (2019), however, argue that such U-shaped patten could be largely caused by some

outliers among developed economies. In their view, the relationship between development and nascent entrepreneurship resembles an L-shaped curve, with entrepreneurship rates decreasing until a certain stage of development, after which the rates remain low. Let us now consider how development could potentially affect necessity- and opportunity-driven nascent entrepreneurs separately. As shown by Estrin et al. (2019), at the early stage of development, the share of necessity entry in nascent entrepreneurship is the highest. Some entrepreneurial projects are undertaken out of necessity as there are insufficient well-paid employment opportunities. The share of necessity-driven entrepreneurship then decreases with a raise in the level of development. This could be the effect of an increase in the opportunity cost of entrepreneurship caused by the rising real wages. Hence, it is expected that the probability of becoming a necessity-driven entrepreneur decreases with economic development.

The rate of opportunity-driven entrepreneurs should also be high at the early stage of development as the scarcity of well-paid employment leads to low opportunity cost of entrepreneurship. Furthermore, the barriers to entrepreneurial entry are relatively low in low-income economies (Acs et al., 2008). The increased real wages, an effect of economic development, can discourage the entry of this type of entrepreneurs. However, from a certain level of economic development new business opportunities can arise as increasing income and wealth enhance consumer demand for variety (Jackson, 1984), leading to more opportunity-driven businesses. Furthermore, after reaching technological frontier at which growth relies on innovation (Acemoglu et al., 2006), the number of opportunity-driven entrepreneurs may increase as they can play important role of innovators. Hence the U-shaped relationship with development can be expected for opportunity-driven entrepreneurship. To capture this potential U-shaped relationship, we also use GDP per capita in quintiles.

Economic growth, the second economic factor associated with higher demand for goods and services, can also stimulate creation of new opportunity-driven businesses (Reynolds et al., 1994), while reducing necessity-driven entrepreneurship. The final economic factor, unemployment, can act as a push factor for self-employment (Wennekers et al., 2005), leading to increased necessity-driven entrepreneurship, but it can also be associated with reduced entrepreneurial opportunity (e.g. Audretsch & Thurik, 2000, Verheul et al., 2001), reducing number of opportunity-driven entrepreneurs.

Financial constraints have been widely recognized to be one of the major obstacles to become an entrepreneur (e.g. Paulson and Townsend, 2004, Kerr and Nanda, 2009).

Hence, it is important to control for availability of both formal and informal financing. To account for formal financing, we use four measures of financial development: domestic credit to private sector (% of GDP), bank credit to bank deposit, bank deposits (% of GDP), and stock market capitalization (% of GDP). While the more developed financial sector provides greater access to capital, it does not necessarily alleviate financing constraints for nascent entrepreneurs. As mentioned in the Theoretical Framework section, these individuals are often soft-information lenders with limited collateral and business track records. Therefore, banks, both domestic and foreign (through cream-skimming practices), might direct available capital to hard-information borrowers. Since nascent entrepreneurs are less likely to have access to formal financing, they rely on informal financing sources (e.g. family and friends, business angels) to start their business. To capture for this source of financing, we use informal investor rate derived from GEM APS and aggregated to the country level. We also control for the health of financial sector by using financial soundness and financial crisis indicators. It is expected that financial recession can lead to high unemployment (as new and established firms face financial constraints) and lack of business opportunities, increasing necessity-driven entrepreneurship and decreasing opportunity-driven entrepreneurship.

A large body of literature also points at institutions as an important driver of entrepreneurship. We consider a range of formal institutions measures to capture its most relevant aspects: rule of law, political system, administrative requirements for starting a new business (also called formal barriers to entry), and fiscal regime. The literature on institutions and entrepreneurship highlights rule of law to be one of the most important dimensions of institutions that affect entrepreneurship. It is expected that a weak rule of law, which leads to weak security of property and other economic rights, is likely to increase a thread of expropriation of entrepreneurial returns, discouraging entrepreneurial entry (e.g. Estrin et al., 2016). Following Acemoglu and Johnson (2005), constraints on executive from Polity IV is used as a proxy for property rights protection. When looking for an appropriate political system measure we have also turned to Polity IV, which has numerous advantages over other relevant databases (see Munck and Verkuilen, 2002, for a comparison). However, as polity, a proxy for political system, is highly correlated (74%) with constraints on executives for our main sample, it has been excluded from our analysis. Other institutions dimension, the formal barriers to entry, measured by the number of procedures, cost and time required to start a business, should have a negative effect as they decrease expected entrepreneurial profit. Klapper et al. (2006), for example, provides evidence that costly market entry regulations hamper the creation of new firms. The fiscal legislation has ambiguous effect. While high taxes reduce expected return on entrepreneurship, they could potentially be evaded or avoided

by setting up a new business (Verheul *et al.*, 2001). As Total tax rate (% of commercial profits), a proxy for fiscal legislation, is available from 2005 only, it will be excluded from main specifications to secure a larger number of observations.

Another determinant of entrepreneurial activities, which is often mentioned in the literature, is country's entrepreneurial culture, a measure of informal institutions. Following Wennekers *et al.* (2005), we proxy entrepreneurial role models, one of culture's dimensions, with incumbent business ownership rate, a sum of young and established business ownership rates. Furthermore, we create a culture perception index based on three indicators taken from GEM APS and aggregated to the country level: Entrepreneurship as Desirable Career Choice, High Status Successful Entrepreneurship, and Media Attention for Entrepreneurship. We expect both entrepreneurial culture measures to have positive impact on necessity- and opportunity-driven entrepreneurship.

We recognize that trade is not only a channel through which trade credit flows can affect entrepreneurship, as mentioned in the Theoretical Framework (Section 3.2), but it can also impact entrepreneurial activities without trade credit presence. Hence, we control for it by using a sum of country's export and import⁵⁴ expressed in percentage of GDP. In accordance with the Grossman (1984)'s occupational choice model, it is expected that higher trade reduces necessity-driven entrepreneurship. In case of opportunity-driven entrepreneurs, increased import, associated with additional market competition, has negative impact by lowering expected entrepreneurial profit. Meantime, higher export creates new business opportunities and should have a positive effect. Therefore, trade's effect on opportunity-driven entrepreneurship is ambiguous.

In addition to individual's educational attainment, we also control for an aggregate labour force education. This is motivated by the fact that the more educated the labour force, the higher the competition in the job market. As a result, decreased availability of jobs can cause higher necessity-driven entrepreneurship. Furthermore, education can influence the attitude of people towards entrepreneurship (Verheul *et al.*, 2001), increasing entrepreneurial culture, which encourages entrepreneurial activities, both necessity- and opportunity-driven. The more educated labour force can also create more business opportunities, further boosting opportunity-driven entrepreneurial activities.

Finally, we account for industry composition of a country by including the value added of 10 industries, a structure proposed by the ISIC 4 standards. This allows to control for

⁵⁴ Country's export and import are highly correlated and hence, we decided to take a sum of the two measures.

sectoral differences in capital-intensity (Estrin *et al.*, 2013) that may affect nascent entrepreneurship.

The correlation matrix⁵⁵ of all country-level and individual-level controls, as well as independent variables, reveals that none of the variables are highly correlated.

3.3.4. Methodology

We use multilevel multinomial modelling approach to accommodate for nominal dependent variable with three categories and to account for the fact that our dataset has a hierarchical structure, where individuals represent level one and country-years represent level two. As a result, we can address unobserved heterogeneity within the context of cross-country and cross-time by controlling for clustering of data within country-year. It is important to control for clustering effect as individuals nested within a country-year group are more likely to have similar behaviour. A failure to account for this effect leads to a biased estimation of coefficients of the country-year-level regressors (Rabe-Hesketh *et al.*, 2005).

We denote by y_{ij} the outcome for individual i in country-year j which is coded:

$$y_{ij} = \begin{cases} 0 & \text{not nascent entrepreneur} \\ 1 & \text{necessity – driven entrepreneur} \\ 2 & \text{opportunity – driven entrepreneur} \end{cases}$$

The probabilities of entrepreneur type are denoted by $\pi_{ij}^{(s)} = \Pr(y_{ij} = s)$, $s = 0, 1, 2$. Taking “not nascent entrepreneur” as the reference category, the multilevel multinomial model can be written:

$$\log\left(\frac{\pi_{ij}^{(s)}}{\pi_{ij}^{(0)}}\right) = \alpha^{(s)}FI_j^{(s)} + \beta^{(s)}IC_{ij}^{(s)} + \gamma^{(s)}CYC_j^{(s)} + \mu_j^{(s)} + \nu_{ij}^{(s)}, \quad s=1, 2. \quad (7)$$

Where $FI_j^{(s)}$ is a vector of financial integration covariates, $IC_{ij}^{(s)}$ is a vector of individual-level controls, $CYC_j^{(s)}$ is a vector of country-year controls, $\mu_j^{(s)}$ is a random effect representing unobserved country-year characteristics, and $\nu_{ij}^{(s)}$ is a random effect representing unobserved individual characteristics. To capture the moderating effect of trade openness on financial integration and entrepreneurial entry highlighted in the Theoretical Framework (Section 3.2), we also include relevant interaction terms in some specifications.

One may be concerned about potential endogeneity of this study as there is strong evidence in the literature that entrepreneurship can affect some of our country-year

⁵⁵ Due to a large number country-level controls, the correlation matrix is very large and we do not report it in this paper. It is available on request.

variables. For example, it is widely acknowledged that entrepreneurship can boost economic growth (e.g. Wennekers and Thurik, 1999, Wong *et al.* , 2005). Furthermore, countries with low entrepreneurial activities can be more willing to open up for foreign capital or limit administrative requirements to set up a new business. However, endogeneity problem is not of concern in this study, as nascent entrepreneurs are still in the process of setting up a firm and do not exist in the official registries, a government cannot tailor relevant policies to them. Moreover, this group of entrepreneurs have not been in operation for more than 3 months, and hence are unlikely as yet to affect country-year outcomes.

3.4. Empirical results

Due to a large number of country-year factors that could possibly affect one's probability to become nascent entrepreneur, as well as the limited time coverage of some of them, we try to determine and keep the most suitable set of controls first. To do so we run multilevel multinomial regressions with only overall FI index and FDI measures, as well as different sets of country-year controls for the same sample (278,579 observations, 118 country-year groups from 28 countries in the period 2005-2011). Some of the results are shown in Appendix J. Then, we compare Akaike's Information Criterion results to determine a model with the most suitable set of controls. Model 6A has the lowest AIC score and hence, we will use its set of controls in the main regressions. We will however not report them in our main result tables in the interest of space. In other words, in section 3.4.1, we will explain how we have selected our set of controls, before moving on from section 3.4.2 onward, to testing our hypotheses. All the tables from section 3.4.2 onwards will report results from regressions including the controls identified in section 3.4.1 even though they are not explicitly reported.

3.4.1. Controls

As can be seen in Appendix J, all individual-level controls have the expected signs and are statistically significant. Age is positive, and age squared is negative, proving the existence of the inverted U-shaped relationship. Male are traditionally found to be more likely to become nascent entrepreneurs, both due to pull and push factors. Fear of failure prevents one from becoming a nascent entrepreneur, while the opposite is true for sustainable skills. Individual's education attainment has negative effect on necessity-driven entrepreneurship, but it is positive for opportunity-driven one. Both knowing someone who is an entrepreneur and having discontinued a business in the past year increases the likelihood of becoming both types of nascent entrepreneurs. Finally, having full-time or part-time work, as well as not working (excluding retired and students), also improves this likelihood.

In terms of economic factors, there is strong evidence that GDP per capita quintiles have negative effect on necessity-driven entrepreneurship, indicating the lack of U-shaped relationship. Most GDP per capita quintiles (apart from quintile 2) are statistically insignificant for opportunity-driven entrepreneurship. GDP growth is also found to be significant in one specification and will be excluded from the main regressions as according to AIC, a model without this variable has a better fit. Only long-term employment is strongly significant and negative for necessity-motivated entrepreneurship, in line with our expectations.

Most of financial development variables have negative signs, indicating that more developed financial sector does not improve nascent entrepreneurs' access to formal financing. On the contrary, informal investors rate is positive for both type of nascent entrepreneurs, which is in line with expectations. The health of the financial sector, as measured by financial soundness and financial crisis indices, does not seem to affect the likelihood of becoming nascent entrepreneur. Similarly to GDP growth, these two measures will be excluded from further regressions. It is dictated by not only AIC score, but also by the fact that financial soundness is available only until 2012 and financial crisis until 2011.

Regarding institutions, executive constraints and culture measures (i.e. baby and established businesses rate, and culture perception), are statistically significant and have the expected positive sign. Among administrative requirement measures, time required to start a new business has a negative sign, while the number of procedures has a positive sign for both type of nascent entrepreneurs. This counter-intuitive result is similar to those reported by Van Stel *et al.* (2007), who find the number of procedures to be positively associated with necessity-driven entrepreneurship rate. Their explanation is that due to burdensome business regulations, business owners are more reluctant to register their firms and prefer to set up their business in the informal sector. We also offer another possible explanation, which is related to the limitation of the measure itself. This is, all the World Bank's Doing Business measures are developed based on interviews conducted on the sampled limited liability companies, which, for example, must be 100% owned by five domestic owners, have a start-up capital of 10 times income per capita, hire 10 to 50 employees, all with domestic nationality, one month after the commencement of operations, and operate in the largest business city (World Bank, 2017). As noted by Ács *et al.* (2014), the imposed sampling restrictions may lead to an exclusion of well over 90% of the new firm population in any given country. Hence, we believe that these measures do not accurately reflect the administrative requirements faced by nascent entrepreneurs.

The remaining country-year controls have expected signs. Trade is found to be negative for necessity-driven entrepreneurs. Labour education is positive for both types of entrepreneurs. The results of industries' value added are also intuitive. For example, the higher value added of the finance and insurance sector, which is a knowledge-based industry, leads to the lower possibility of becoming necessity-driven entrepreneurs, while increasing the opportunity-driven ones. We drop 3 sectors from the further analysis as they are consistently statistically insignificant.

3.4.2. Financial integration effects

The main empirical results of this chapter are presented in Table 14. The coefficients of FDI inflows, a proxy for MNEs entry into non-financial sector, are consistently negative for NDNE in all models. However, it is only statistically significant at 10% in model (1). Hence, H1a cannot be rejected at 10% as there is some evidence that MNEs entry reduces the possibility of becoming NDNE, probably through labour and product market effects. FDI inflows, on the other hand, is statistically insignificant for ODNE in all specifications. This indicates that MNEs entry does not affect this type of entrepreneurs as its negative labour market and product market effects are most likely counter-balanced by positive horizontal and vertical spillovers, rejecting both H2a and H2b.

FDI inflows into financial sector, proxied by foreign bank ratio, are found to be statistically significant and positive for NDNE in model (1). However, it becomes negative and insignificant when the interaction term of foreign bank ratio and trade is included in model (2) onwards. Meanwhile, the interaction term appears to be consistently positive and statistically significant at 1% in all specifications. These results could indicate that foreign banks benefit entrepreneurs starting a business out of necessity only when trade openness is in place, supporting H14a. On the contrary, ODNE do not seem to be affected by foreign banks as the latter are found to be statistically insignificant in all the specifications. Furthermore, there is no proof that the existence of trade openness alters the foreign bank's relationship with ODNE.

The results in Table 14 show portfolio investment net flows reduce the likelihood of becoming NDNE, lending some support for H5a. However, the evidence for portfolio investment effects is relatively weak as the statistical significance is found in only one specification (model (1)). The interaction term between portfolio investment inflow openness and trade seems to be positive and statistically significant for both types of entrepreneurs in model (4), suggesting that trade openness triggers a positive effect of portfolio investment. Similarly to net flows, the interaction term is significant in only one

model, leading to a conclusion that the evidence of portfolio investment's effect on nascent entrepreneurship is relatively weak.

Unlike portfolio investment, cross-border bank lending consistently appears to reduce the likelihood of becoming both necessity- and opportunity-driven entrepreneur as financial credit inflow openness index turns out to be negative and significant in all specifications, apart from model (2). Furthermore, offshore bank lending net flows are also found to be negative for NDNE, confirming that this type of flows is hurtful for nascent entrepreneurs. Hence, H7a and H8a cannot be rejected at any reasonable significance level. As in the case of foreign bank presence, the interaction term between offshore bank lending inflows and trade appears to be positive for NDNE. Furthermore, it is consistently statistically significant at 1% and 5% across all the relevant specifications (models (2) – (5)). The interaction term, is again, not found to affect ODNE.

Trade credits are found to have the expected impact consistently across all specifications shown in Table 14. Both trade credit inflows and outflows are found to affect ODNE, but in opposite directions. The removal of controls on trade credit inflows, associated with higher export, increases the probability of becoming ODNE by 0.53% (model (1)) to 0.70% (model (4)) and therefore, H12 cannot be rejected. On the other hand, if trade credit outflows restrictions are lifted, this probability decreases by 0.38% (model (2)) to 0.57% (model (2)). These results are most likely caused by the fact that higher import associated with free trade credit outflows leads to higher competition in the product market, which in turn decreases the expected entrepreneurial profit. Hence, H11b cannot be rejected.

Relaxing restrictions on trade credit inflows also seems to increase the possibility of becoming a NDNE. On the contrary, this type of entrepreneurs is found to be negatively affected by trade credit outflows openness. The effect is relatively strong as the removal of trade credit outflows restrictions decreases the likelihood of becoming NDNE by at least 0.71% (model 14), with the highest magnitude of -0.84% reported in model 2. This result is most likely caused by the product market effect that follows higher import, as mentioned above. As a result, H11a cannot be rejected.

The final type of capital flows considered in this paper, remittance inflows, is found to be insignificant across all specifications. This could be caused by the possibility that the remittances' positive effects are counter-balanced by their negative effects. It could also be explained by the inaccuracy in the measurement of remittance inflows, especially in the middle-income economies. As noted by Aggarwal et al. (2011), balance of payment data on remittances record more accurately remittances sent via banks, ignoring those sent via non-bank institutions and informal channels. These unrecorded remittances

Table 14. Empirical results.

		(1)		(2)		(3)		(4)		(5)	
		Necess.	Opport.	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.
FDI	FDI inflows (H1, H2)	-0.0103** (0.00481)	0.0000752 (0.00325)	-0.00683 (0.00486)	-0.000171 (0.00329)	-0.00671 (0.00481)	0.000364 (0.00327)	-0.00530 (0.00465)	0.00229 (0.00311)	-0.00660 (0.00485)	-0.000351 (0.00329)
	Foreign bank ratio (H3, H4)	0.0141*** (0.00372)	0.000769 (0.00291)	-0.0136 (0.00940)	0.000443 (0.00717)	-0.00836 (0.00734)	-0.00209 (0.00550)	-0.00740 (0.00730)	-0.000953 (0.00552)	-0.0106 (0.00820)	-0.000304 (0.00645)
	Foreign bank ratio x Trade (H14)			0.000247*** (0.0000921)	-0.0000157 (0.0000683)	0.000219*** (0.0000739)	0.00000789 (0.0000559)	0.000218*** (0.0000741)	0.0000057 (0.000056)	0.000216*** (0.000079)	-0.0000080 (0.000061)
Portfolio investment	Portfolio investment inflow openness (H5, H6)	0.223 (0.595)	-0.368 (0.450)	0.911 (1.601)	-1.258 (1.228)					0.101 (0.604)	-0.435 (0.455)
	Portfolio investment net flows (H5, H6)	-0.00841** (0.00416)	0.000718 (0.00337)	0.00639 (0.0102)	-0.00664 (0.00852)	-0.00507 (0.00427)	0.000911 (0.00346)	-0.00507 (0.00429)	0.00101 (0.00349)	0.00585 (0.0102)	-0.00695 (0.00855)
	Portfolio investment inflow openness x Trade (H15)			-0.0121 (0.0191)	0.0113 (0.0140)	0.000804 (0.00728)	-0.00196 (0.00514)	0.00646* (0.00378)	0.00578** (0.00279)		
	Portf. investment net flows x Trade (H15)			-0.0000843 (0.0000720)	0.0000614 (0.0000609)					-0.0000813 (0.0000722)	0.0000620 (0.0000612)
Loans from non-resident banks	Financial credits inflow openness (H7, H8)	-1.028*** (0.334)	-0.654** (0.276)	-0.631 (0.814)	-0.0265 (0.613)	-0.912*** (0.307)	-0.546** (0.250)	-0.809*** (0.294)	-0.411* (0.240)	-0.849** (0.353)	-0.544* (0.289)
	Offshore bank lending net flows (H7, H8)	0.00558 (0.0185)	-0.00455 (0.0136)	-0.0971** (0.0493)	-0.0137 (0.0403)	-0.0926* (0.0479)	-0.0130 (0.0396)	-0.0919* (0.0482)	-0.0123 (0.0400)	-0.0936* (0.0482)	-0.0113 (0.0397)
	Financial credits inflow openness x Trade (H16)			-0.00313 (0.0103)	-0.00720 (0.00758)						
	Offshore loans net flows x Trade (H16)			0.00102*** (0.000390)	0.0000825 (0.000311)	0.000958** (0.000378)	0.0000709 (0.000305)	0.000963** (0.000380)	0.0000791 (0.000308)	0.000990*** (0.000382)	0.0000542 (0.000305)
Remittances	Remittance inflows (H9, H10)	-0.0518 (0.0695)	-0.0345 (0.0529)	0.00928 (0.0780)	-0.0690 (0.0587)					0.00468 (0.0753)	-0.0410 (0.0565)
Commercial trade credits	Commercial credits outflow openness (H11)	-0.748*** (0.258)	-0.520** (0.203)	-0.836*** (0.281)	-0.381* (0.220)	-0.737*** (0.248)	-0.571*** (0.194)	-0.713*** (0.249)	-0.543*** (0.195)	-0.817*** (0.265)	-0.479** (0.207)
	Commercial credits inflow openness (H12)	0.212 (0.314)	0.437 (0.266)	0.808** (0.395)	0.463 (0.328)	0.526* (0.291)	0.636** (0.248)	0.572** (0.290)	0.699*** (0.247)	0.759** (0.357)	0.530* (0.299)
Overall FI de jure	Overall inflows openness index (H13)	1.130 (0.919)	1.625** (0.699)	-2.761 (2.729)	1.164 (2.084)					-1.500 (1.493)	0.796 (1.169)
	Overall inflows openness x Trade (H17)			0.0416 (0.0308)	0.00266 (0.0227)	0.0100 (0.0103)	0.0134* (0.00750)			0.0241* (0.0130)	0.00913 (0.0101)
Constant		-9.729*** (1.924)	-7.078*** (1.522)	-8.423*** (2.209)	-6.482*** (1.716)	-9.953*** (1.708)	-6.795*** (1.362)	-10.35*** (1.683)	-7.321*** (1.342)	-8.658*** (2.185)	-6.594*** (1.713)
Df		97		109		99		97		105	
	Country-year var. estimate	0.0906614		0.0863106		0.0892854		0.0915432		0.0880076	
	Country-year std. err.	0.0134523		0.0130566		0.0132971		0.0135455		0.0131954	

Note: Standard errors in parentheses; ***p<0.01, **p<0.05, *p<0.10. Individual-level and country-year-level controls are included in all specifications. Sample size is 462,303 (181 country-year groups, 30 countries) in all specifications.

range from 50% to 250% of official statistics on remittances. Hence, if nascent entrepreneurs rely on unrecorded remittances, they are less likely to be affected by the formal inflows of this type of capital.

As stated in the Theoretical Framework (Section 3.2), lifting capital controls can have a disciplining effect in the economy, which in turn affects nascent entrepreneurs. To capture this potential effect, we have included the overall inflows openness index in our models. The index appears positive and statistically significant at 5% for ODNE in model (1), indicating that opportunity-driven nascent entrepreneurs can benefit from *de jure* financial integration. This effect is independent from actual capital flows, captured by the relevant measures also present in model (1). The interaction term between overall openness index and trade also turns out to be statistically significant, but only at 10%, in two specifications (models (3) and (5)). Thus, there is only weak evidence that trade openness has a positive moderation effect on the *de jure* FI – nascent entrepreneurship relationship.

3.5. Robustness checks

To check if the results reported in the previous sections are robust, we first identify outliers based on countries' nascent entrepreneurship rate, a measure aggregated from the individual-level data by GEM. Then the severe outliers⁵⁶, which are outside the outer fence (defined by inter-quartile range multiplied by three), are eliminated from the sample. The obtained results⁵⁷ are similar to those reported before.

We also eliminate countries that appear only once in the sample to further test the results sensitivity. There are 2 countries out of 30 that have data available for only one year: Costa Rica (in 2012), and Ecuador (in 2012). After removing 3,157 affected individuals, the results remain consistent⁵⁸ with the ones presented in the previous section.

Furthermore, looking at the list of countries reported in Appendix L, one can notice that it is dominated by high-income economies (22 out of 30). To introduce more variety and increase the sample size, we remove country-year control variables that are irrelevant to our hypotheses. In other words, we keep all individual-level controls and the following country-year controls: financial development measures, informal investor rate, formal entry barriers, baby and established business rate, and trade. As a result, we obtain a

⁵⁶ The country-year removed are: Australia in 2004, Costa Rica in 2012, Ecuador in 2012, Latvia in 2012, Mexico in 2008, and New Zealand in 2004 and 2005. The total of 7,644 individuals are eliminated.

⁵⁷ Results available on request.

⁵⁸ Results available on request.

sample of 717,789 individuals from 59 countries in the period 2003-2013, where 27 countries are in the upper- and low-middle-income groups (see Appendix L). Unfortunately, there are still no low-income countries present. The new results, presented in Appendix M, provide even stronger evidence of financial integration effect on nascent entrepreneurship. The negative coefficient of FDI inflows is now reported for NDNE in all specifications. Similarly, the positive impact of foreign bank presence is found for ODNE in all, apart from one (model 4), specifications. The negative effect of portfolio investment is now shown for both types of nascent entrepreneurs. Hence, inclusion of more countries in the sample confirms that financial integration affects the possibility of becoming both necessity- and opportunity-driven entrepreneurs.

As mentioned in Section 3.3.1, during the process of identifying nascent entrepreneurs we have classified individuals answering “Don’t know”/”Combination of both”/”Have a job but seek better opportunities” to Q3 (i.e. “Were you involved in this start-up to take advantage of a business opportunity or because you had no better choice for work?”) as opportunity-driven entrepreneurs. Hence, to further check the robustness of our main results, we exclude this group of individuals from the sample. After removing 553 affected individuals, we obtain similar regression results to the ones reported before.

Finally, although we have controlled for the potential effect of financial crisis in 2007-2008 by using country-year as level two in the hierarchical structure of our dataset, as well as by using financial crisis measure, we further test the robustness of our results by limiting our sample to the pre-crisis years (i.e. 2003-2006). The new results, based on the sample of 134,716 individuals from 25 countries, are roughly the same as the ones described before.

Overall, the performed robustness checks give us confidence that the main results reported in the previous section are not sensitive to the removal of outliers, nor the elimination of the less relevant country-year controls and the resulted more diverse countries in the sample. The findings also do not seem to change dramatically when the sample is limited to the pre-crisis years, indicating that the 2007-2008 financial crisis had a limited effect on the FI-nascent entrepreneurship relationship. Hence, it can be concluded that while *de jure* financial integration appears to be beneficial for nascent entrepreneurs, *de facto* financial integration has dual effects. The consequences of *de facto* financial integration depend largely on the composition of capital flows, with trade credit inflows and FDI into financial sector (i.e. foreign bank presence) being the beneficial types of asset categories. Our findings are summarized in Appendix K.

3.6. Conclusions

Overall, we have found empirical evidence supporting most of our hypotheses, which has important implications for policy-making and for our understanding of the complex FI-entrepreneurship relationship. We believe that policy makers should attempt to encourage ODNE, which is most likely to turn into productive entrepreneurship in Baumol (1996)'s sense, by supporting beneficial types of FI. Our results indicate that lifting controls on trade credit inflows, which can lead to higher export, has strong positive effect on this type of nascent entrepreneurs. Furthermore, some evidence of the beneficial effect of the overall *de jure* financial integration on ODNE is also reported. Policy-makers should be careful with the remaining types of financial integration. While trade credit inflows should be advocated as they positively affect ODNE, its outflows should be limited due to negative product market effect related to higher import. Loans from non-resident banks are also found to reduce the likelihood of becoming opportunity-driven nascent entrepreneurs.

We have found strong evidence supporting the private interest theory of financial development by Rajan & Zingales (2003). While *de jure* financial integration and portfolio investment, in conjunction with trade openness, appear to positively affect both types of nascent entrepreneurs, foreign banks and offshore bank lending seem to benefit necessity-driven ones specifically. Hence, it is recommended that financial integration, both *de jure* and *de facto*, should always be accompanied by trade openness.

Our work provides evidence of financial integration-entrepreneurship relationship. However, further empirical examination should be conducted to better understand this relationship. For instance, it would be beneficial to look beyond the necessity-opportunity classification of nascent entrepreneurship and consider alternative measures, such as the low-high aspiration ventures and more-less innovative ventures. These measures can better capture the productivity level of entrepreneurial activities and hence, give more meaningful guidance to policy-makers.

References

- Acemoglu, D. and Johnson, S. (2005) Unbundling institutions. *Journal of Political Economy*, vol. 113, pp. 949-995.
- Acemoglu, D., Zilibotti, F., Aghion, P. (2006) Distance to frontier, selection and economic growth. *Journal of European Economic Association*, vol. 41, pp. 31-74.
- Ács, Z. J., Arenius, J. P., Hay, M., & Minniti, M. (2005) Global Entrepreneurship Monitor: 2004 executive report. Babson Park, MA. and London, UK: Babson College and London Business School.
- Ács, Z. J., Desai, S., Hessel, J. (2008) Entrepreneurship, economic development and institutions. *Small Business Economics*, vol. 31, pp. 219-234.
- Ács, Z. J., Autio, E., & Szerb, L. (2014). National systems of entrepreneurship: Measurement issues and policy implications. *Research Policy*, 43(3), 476–494.
- Ács, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). The knowledge spillover theory of intrapreneurship. *Small Business Economics*, 32(1), 15–30.
- Ács, Z. J., Brooksbank, D. J., O’Gorman, C., Pickernell, D. G., & Terjesen, S. (2007). The knowledge spillover theory of entrepreneurship and foreign direct investment. *Jena Economic Research Papers No. 2007-059*.
- Ács, Z. J., Desai, S., & Klapper, L. F. (2008). What does “entrepreneurship” data really show? *Small Business Economics*, 31(3), 265–281.
- Aggarwal, R., Demirgüç-Kunt, A., & Pería, M. S. M. (2011). Do remittances promote financial development? *Journal of Development Economics*, 96(2), 255–264.
- Alfaro, L., & Charlton, A. (2008). International financial integration and entrepreneurial firm activity. *Harvard Business School, Working Paper No. 07-012*.
- Amoros, J. E. and Cristi, O. (2011) Poverty and entrepreneurship on developing countries, in: Minniti, M. (ed.), *The dynamics of entrepreneurship: Evidence from Global Entrepreneurship Monitor Data*, Oxford Scholarship Online.
- Amuedo-Dorantes, C., & Pozo, S. (2011). Remittances and income smoothing. *The American Economic Review*, 101(3), 582–587.
- Audretsch, D. B., & Thurik, A. R. (2000). Capitalism and democracy in the 21st Century: from the managed to the entrepreneurial economy. *Journal of Evolutionary Economics*, 10(1–2), 17–34.
- Baumol, W. J. (1996). Entrepreneurship: Productive, unproductive, and destructive. *Journal of Business Venturing*, 11(1), 3–22.
- Berner, E., Gomez, G. M., & Knorringa, P. (2008) Helping a large number of people become a little less poor. *Paper presented at the conference UNU-WIDER Project Workshop on Entrepreneurship and Economic Development*, 21-23 August 2008. Helsinki: UNU-WIDER.
- Black, B. S., & Gilson, R. J. (1998). Venture capital and the structure of capital markets: banks versus stock markets. *Journal of Financial Economics*, 47, 243–277.
- Block, J. H., Cumming, D. J., & Vismara, S. (2017) International perspectives on venture capital and bank finance for entrepreneurial firms. *Economia e Politica Industriale*, 44(1), 3-22.
- Bonte, W., Falck, O., Heblich, S. (2009) The impact of regional age structure on entrepreneurship. *Economic Geography*, vol. 85(3), 269-287.
- Carbo-Valverde, S., Rodriguez-Fernandez, F., & Udell, G. F. (2016). Trade credit, the financial crisis, and SME access to finance. *Journal of Money, Credit, and Banking*.
- Clarke, G. R. G., Cull, R., & Martínez Pería, M. S. (2006). Foreign bank participation and access to credit across firms in developing countries. *Journal of Comparative Economics*, 34(4), 774–795.
- Danakol, S. H., Estrin, S., Reynolds, P., & Weitzel, U. (2017). Foreign direct investment via M&A and domestic entrepreneurship: blessing or curse? *Small Business Economics*, 48(3), 599–612.
- Darnihamedani, P., Block, J. H., Hessels, J., Simonyan, A. (2018) Taxes, start-up costs, and innovative entrepreneurship. *Small Business Economics*. <https://doi.org/10.1007/s11187-018-0005-9>

- De Backer, K., & Sleuwaegen, L. (2003). Does foreign direct investment crowd out domestic entrepreneurship? *Review of Industrial Organization*, 22(1), 67–84.
- De Clercq, D., Hessels, J., & Van Stel, A. (2008). Knowledge spillovers and new ventures' export orientation. *Small Business Economics*, 31(3), 283–303.
- Dell'Ariccia, G., & Marquez, R. (2004). Information and bank credit allocation. *Journal of Financial Economics*, 72(1), 185–214.
- Demirgüç-Kunt, A., Córdoba, E. L., Pería, M. S. M., & Woodruff, C. (2011). Remittances and banking sector breadth and depth: Evidence from Mexico. *Journal of Development Economics*, 95(2), 229–241.
- De Soto, H. (1989) *The other path: The invisible revolution in the Third World*. New York: Harper & Row.
- Detragiache, E., Tressel, T., & Gupta, P. (2008). Foreign banks in poor countries: Theory and evidence. *Journal of Finance*, 63(5), 2123–2160.
- Dunning, J. H. (1993). *Multinational enterprise and global economy*. Wokingham: Addison Wesley.
- Estrin, S., Korosteleva, J., & Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations? *Journal of Business Venturing*, 28(4), 564–580.
- Estrin, S., Mickiewicz, T., Stephan, U. (2016) Human capital in social and commercial entrepreneurship. *Journal of Business Venturing*, vol. 31, pp. 449-467.
- Estrin, S., Mickiewicz, T. Stephan, U., Wright, M. (2019) *Entrepreneurship in Emerging Markets*. In: *Oxford Handbook of Management in Emerging Markets*, ed. by R. Grosse and K. E. Meyer. Oxford: Oxford University Press.
- Fernández, A., Klein, M., Rebucci, A., Schindler, M., & Uribe, M. (2015). Capital Control Measures: A New Dataset. *IMF Working Paper No. WP/15/80*.
- Funkhouser, E. (1992). Migration from Nicaragua: some recent evidence. *World Development*, 20(8), 1209–1218.
- Giannetti, M., & Ongena, S. (2009). Financial integration and firm performance: Evidence from foreign bank entry in emerging markets. *Review of Finance*, 13(2), 181–223.
- Goldstein, I., & Razin, A. (2006). An information-based trade off between foreign direct investment and foreign portfolio investment. *Journal of International Economics*, 70(1), 271–295.
- Görg, H., & Strobl, E. (2002). Multinational companies and indigenous development: An empirical analysis. *European Economic Review*, 46(7), 1305–1322.
- Grossman, G. M. (1984). International trade, foreign investment and the formation of the entrepreneurial class. *American Economic Review*, 74(4), 605–614.
- Huang, H., Shi, X., & Zhang, S. (2011). Counter-cyclical substitution between trade credit and bank credit. *Journal of Banking and Finance*, 35(8), 1859–1878.
- Jackson, L. F. (1984) Hierarchic demand and the Engle curve for variety. *Review of Economics and Statistics*, vol. 66(1), 8-15.
- Javorcik, B. S. (2004). Does Foreign Direct Investment Increase the Productivity of Domestic Firms- In Search of Spillovers through Backward Linkages.pdf. *American Economic Review*, 94(3), 605–627.
- Jinjarak, Y., Noy, I., & Zheng, H. (2013). Capital controls in Brazil - Stemming a tide with a signal? *Journal of Banking and Finance*, 37(8), 2938–2952.
- Jovanovic, B. (1994). Firm formation with heterogeneous management and labor skills. *Small Business Economics*, 6(3), 185–191.
- Kerr, W., & Nanda, R. (2009). Financing constraints and entrepreneurship. *NBER Working Paper No. 15498*.
- Kim, P. H., Aldrich, H. E., Keister, L. A. (2006) Access (not) denied: The impact of financial, human, and cultural capital on entrepreneurial entry in the United States. *Small Business Economics*, vol. 27(1), 5-22.
- Klapper, L., Laeven, L., & Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship. *Journal of Financial Economics*, 82(3), 591–629.
- Korosteleva, J., & Mickiewicz, T. (2011). Start-Up Financing in the Age of Globalization. *Emerging Markets Finance and Trade*, 47(3), 23–49.
- Lucas, R. E. Jr. (1978) On the Size Distribution of Business Firms. *The Bell Journal of Economics*, vol. 9(2), 508-523.

- Markusen, J., & Venables, A. (1999). Foreign Direct Investment as a Catalyst for Industrial Development. *European Economic Review*, 43(2), 335–356.
- Munck, G., Verkuilen, J. (2002) Conceptualizing and measuring democracy. *Comparative Political Studies*, vol. 35, pp. 5-34.
- Norback, P. J., Persson, L., & Douhan, R. (2014). Entrepreneurship policy and globalization. *Journal of Development Economics*, 110, 22–38.
- Nyström, K. (2008). The institutions of economic freedom and entrepreneurship: Evidence from panel data. *Public Choice*, 136(3–4), 269–282.
- Parker, S. C. (2018). *The economics of entrepreneurship*. Second edition. Cambridge University Press, Cambridge, UK.
- Paulson, A. L., & Townsend, R. (2004). Entrepreneurship and financial constraints in Thailand. *Journal of Corporate Finance*, 10(2), 229–262.
- Peria, M. S. M. (2006). How foreign participation and market concentration impact bank spreads: Evidence from Latin America. *Journal of Money, Credit, and Banking*, 36(3), 511–537.
- Rajan, R. G., & Zingales, L. (2003). The great reversals: The politics of financial development in the twentieth century. *Journal of Financial Economics*, 69(1), 5–50.
- Shapiro, F. A., & Mandelman, F. S. (2016). Remittances, entrepreneurship, and employment dynamics over the business cycle. *Journal of International Economics*, 103, 184–199.
- Van Stel, A., Storey, D. J., & Thurik, A. R. (2007). The effect of business regulations on nascent and young business entrepreneurship. *Small Business Economics*, 28(2–3), 171–186.
- Verheul, I., Wennekers, S., Audretsch, D., Thurik, R. (2001) An eclectic theory of entrepreneurship: policies, institutions and culture. *Tinbergen Institute Discussion Paper no. TI 2001-030/3*.
- Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. *Small Business Economics*, 13, 27–55.
- Wennekers, S., Van Wennekers, A., Thurik, R., & Reynolds, P. (2005). Nascent entrepreneurship and the level of economic development. *Small Business Economics*, 24(3), 293–309.
- Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335–350.
- Wood, G. (2003) Staying secure, staying poor: The Faustian bargain. *World Development*, 31(3), 455-471.
- Woodruff, C., & Zenteno, R. (2007). Migration networks and microenterprises in Mexico. *Journal of Development Economics*, 82(2), 509–528.
- World Bank (2017) Starting a Business Methodology. Retrieved from: <http://www.doingbusiness.org/Methodology/Starting-a-Business>
- Yang, D. (2008). International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants. *The Economic Journal*, 118, 591–630.
- Yang, D., & Choi, H. J. (2007). Are remittances insurance? Evidence from rainfall shocks in the Philippines. *The World Bank Economic Review*, 21(2), 219–248.

Appendices

Appendix F. Summary of hypotheses.

	Effect on necessity-driven nascent entrepreneurs	Effect on opportunity-driven nascent entrepreneurs
FDI inflows into non-financial sector (MNEs)	H1a(b). Multinational enterprises entry <u>reduces</u> (<u>increases</u>) the possibility of becoming <u>necessity-driven</u> entrepreneur.	H2a(b). Multinational enterprises entry <u>reduces</u> (<u>increases</u>) the possibility of becoming <u>opportunity-driven</u> entrepreneur.
FDI inflows into financial sector (foreign bank presence)	H3a (b). Foreign banks presence <u>increases</u> (<u>reduces</u>) the possibility of becoming <u>necessity-driven</u> entrepreneur.	H4a(b). Foreign banks presence <u>increases</u> (<u>reduces</u>) the possibility of becoming <u>opportunity-driven</u> entrepreneur.
Portfolio investment inflows	H5a(b). Portfolio investment inflows <u>reduces</u> (<u>increases</u>) the possibility of becoming <u>necessity-driven</u> entrepreneur.	H6a. Portfolio investment inflows <u>reduces</u> (<u>increases</u>) the possibility of becoming <u>opportunity-driven</u> entrepreneur.
Cross-border bank lending inflows	H7a(b). Loans from non-resident banks <u>reduces</u> (<u>increases</u>) the possibility of becoming <u>necessity-driven</u> entrepreneur.	H8a(b). Loans from non-resident banks <u>reduces</u> (<u>increases</u>) the possibility of becoming <u>opportunity-driven</u> entrepreneur.
Remittance inflows	H9a(b). Remittance inflows <u>reduces</u> (<u>increases</u>) the possibility of becoming <u>necessity-driven</u> entrepreneur.	H10a(b). Remittance inflows <u>reduces</u> (<u>increases</u>) the possibility of becoming <u>opportunity-driven</u> entrepreneur.
Trade credit flows	Hypothesis 11a. Trade credit <i>outflows</i> <u>reduces</u> the possibility of becoming <u>necessity-driven</u> entrepreneur. Hypothesis 12a. Trade credit inflows has <u>no effect</u> on the possibility of becoming <u>necessity-driven</u> entrepreneur.	Hypothesis 11b. Trade credit <i>outflows</i> <u>reduces</u> the possibility of becoming <u>opportunity-driven</u> entrepreneur. Hypothesis 12b. Trade credit <i>inflows</i> <u>increases</u> the possibility of becoming <u>opportunity-driven</u> entrepreneur.
<i>De jure</i> FI	Hypothesis 13a. Financial liberalization increases the possibility of becoming <u>necessity-driven</u> entrepreneur.	Hypothesis 13b. Financial liberalization increases the possibility of becoming <u>opportunity-driven</u> entrepreneur.
FI interaction with trade openness	H14a. Foreign bank presence <u>increases</u> the possibility of becoming <u>necessity-driven</u> entrepreneur when it is accompanied by trade openness. H15a. Portfolio investment inflows <u>increases</u> the possibility of becoming <u>necessity-driven</u> entrepreneur when it is accompanied by trade openness. H16a. Offshore bank lending inflows <u>increases</u> the possibility of becoming <u>necessity-driven</u> entrepreneur when it is accompanied by trade openness. 17a. Overall <i>de jure</i> financial integration <u>increases</u> the possibility of becoming <u>necessity-driven</u> entrepreneur when it is accompanied by trade openness.	H14b. Foreign bank presence <u>increases</u> the possibility of becoming <u>opportunity-driven</u> entrepreneur when it is accompanied by trade openness. H15b. Portfolio investment inflows <u>increases</u> the possibility of becoming <u>opportunity-driven</u> entrepreneur when it is accompanied by trade openness. H16b. Offshore bank lending inflows <u>increases</u> the possibility of becoming <u>opportunity-driven</u> entrepreneur when it is accompanied by trade openness. 17b. Overall <i>de jure</i> financial integration <u>increases</u> the possibility of becoming <u>opportunity-driven</u> entrepreneur when it is accompanied by trade openness.

Appendix G. Individual-level controls.

Variable type	Variable name	Definition	Expected effect on NDNE	Expected effect on ODNE
Demographic characteristics	Age	A continuous variable indicating an individual's age, which must be between 18 and 64. Prior to 2000, this was a categorical variable with 7 categories.	+	+
Demographic characteristics	Age squared	Squared value of age. It is included to capture the inverted U-shape relationship between age and entrepreneurial activity.	-	-
Demographic characteristics	Gender	A binary variable where 1 = male, 0 = female.	+	+
Human capital	Education	A categorical variable indicating an individual's educational attainment according to the following categories: Primary or below Secondary Tertiary or above	-	+
Psychological factor	Fear of failure	A binary variable where 1 = fear of failure would prevent an individual from starting a business, 0 = otherwise. This variable is available from 2000.	-	-
Psychological factor	Sustainable skills	A binary variable where 1 = an individual perceives to have knowledge, skills and experience required to start a new business, 0 = otherwise. This variable is available from 2001.	+	+
Social network	Knowing other entrepreneurs	A binary variable where 1 = an individual knows a person who started a business in the past 2 years, and 0 = otherwise.	+	+
Experience	Discontinuation of business	A binary variable where 1 = an individual has discontinued a business in the past 12 months and the business was not continued, 0 = otherwise. This variable is available from 2002.	+	+
Opportunity costs	Work status	A categorical variable indicating an individual's employment status according to the following categories: Working full-time or part-time Not working Retired or students	?	?

Appendix H. Correlation matrix of individual-level controls.

	age	male	secondary educ.	tertiary educ.	fear of failure	sus. skills	knowing entrep.	discount. of business	full or part-time work	not working
age	1									
male	-0.0244	1								
secondary educ.	-0.0892	0.0028	1							
tertiary educ.	-0.0262	0.0123	-0.5042	1						
fear of failure	0.0102	-0.0643	-0.0102	-0.0064	1					
sus. skills	-0.0234	0.1425	-0.0089	0.062	-0.1397	1				
knowing entrep.	-0.1226	0.0978	-0.0033	0.0626	-0.0402	0.245	1			
discount. of business	-0.0146	0.028	-0.0092	-0.0172	-0.0226	0.1149	0.0845	1		
full or part-time work	-0.003	0.1876	-0.0267	0.1566	-0.0129	0.1427	0.1086	-0.0006	1	
not working	0.0146	-0.2316	-0.0075	-0.1415	0.0363	-0.0775	-0.0805	0.0207	-0.6877	1

Appendix I. Country-level controls.

Variable name	Definition	Source	Expected effect on NDNE	Expected effect on ODNE
GDP per capita, PPP (constant 2011 international \$)	GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars (constant 2011) using purchasing power parity rates. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	WDI	-	U-shaped (first -, then +)
Long-term unemployment (% of total unemployment)	Number of people with continuous periods of unemployment extending for a year or longer, expressed as a percentage of the total unemployed.	WDI	+	-
Domestic credit to private sector (% of GDP)	Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises.	GFDD	?	?
Bank credit to bank deposit	The financial resources provided to the private sector by domestic money banks as a share of total deposits. Domestic money banks comprise commercial banks and other financial institutions that accept transferable deposits, such as demand deposits. Total deposits include demand, time and saving deposits in deposit money banks.	GFDD	?	?
Bank deposits (% of GDP)	The total value of demand, time and saving deposits at domestic deposit money banks as a share of GDP. Deposit money banks comprise commercial banks and other financial institutions that accept transferable deposits, such as demand deposits.	GFDD	?	?
Stock market capitalization (% of GDP)	Total value of all listed shares in a stock market as a percentage of GDP.	GFDD	?	?
Informal investors rate	Percentage of 18-64 population who have personally provided funds for a new business, started by someone else, in the past three years.	GEM APS	+	+
Executive constraints	A proxy for property rights. This variable refers to the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities. Such limitations may be imposed by any "accountability groups." In Western democracies these are usually legislatures. Other kinds of accountability groups are the ruling party in a one-party state; councils of nobles or powerful advisors in monarchies; the military in coup-prone polities; and in many states a strong, independent judiciary.	Polity IV	+	+

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Appendix I (continued). Country-level controls.

Variable name	Definition	Source	Expected effect on NDNE	Expected effect on ODNE
Start-up procedures to register a business (number)	The number of procedures officially required or commonly done in practice to start up and formally operate a business. A procedure is defined as any interaction of the company founder with external parties (government agencies, lawyers, auditors, notaries).	WDI	-	-
Cost of business start-up procedures (% of GNI per capita)	The cost of procedures officially required or commonly done in practice to start up and formally operate a business. It includes all identifiable official expenses (fees, costs of procedures and forms, photocopies, fiscal stamps, legal and notary charges, etc.).	WDI	-	-
Time required to start a business (days)	The time needed to complete procedures officially required or commonly done in practice to start up and formally operate a business.	WDI	-	-
Culture perception index	<p>An index created based on 3 components of cultural indicators: Entrepreneurship as Desirable Career Choice, High Status Successful Entrepreneurship, and Media Attention for Entrepreneurship. The first indicator is a percentage of 18-64 population who agree with the statement that in their country, most people consider starting a business as a desirable career choice. High Status Successful Entrepreneurship is a percentage of 18-64 population who agree with the statement that in their country, successful entrepreneurs receive high status. Media Attention for Entrepreneurship is a percentage of 18-64 population who agree with the statement that in their country, you will often see stories in the public media about successful new businesses.</p> <p>First, the interitem correlations are computed for all pairs of categories above and then, a Cronbach's alpha statistic for the scale formed from them is calculated. Next, a score is created for every observation for which there is a response to at least one item.</p>	GEM APS, own calculation	+	+

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Appendix I (continued). Country-level controls.

Variable name	Definition	Source	Expected effect on NDNE	Expected effect on ODNE
New and established business ownership rate	A sum of new and established business ownership rate. A new business ownership rate is percentage of 18-64 population who are currently an owner-manager of a new business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than three months, but not more than 42 months An established business ownership rate is percentage of 18-64 population who are currently an owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months.	GEM APS	+	+
Trade (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	WDI	-	?
Labour force with secondary education (% of total)	Labour force with secondary education is the share of the total labour force that attained or completed secondary education as the highest level of education.	WDI	+	+
Labour force with tertiary education (% of total)	Labour force with tertiary education is the share of the total labour force that attained or completed tertiary education as the highest level of education.	WDI	+	+
Industry value added (% of GDP)	A set of 10 variables showing value added of 10 industries (according to ISIC 4 industry classification): Agriculture, forestry and fishing; Manufacturing, mining and quarrying and other industrial activities; Wholesale and retail trade, transportation and storage, accommodation and food service activities; Information and communication; Financial and insurance activities; Real estate activities; Professional, scientific, technical, administrative and support service activities; Public administration and defence, education, human health and social work activities; Other service activities.	United Nations	?	?

Note: WDI stands for World Development Indicators, GFDD stands for Global Financial Development Database, GEM ASP stands for Global Entrepreneurship Monitor's Annual Population Survey, WWGI stands for World Wide Governance Indicators

Appendix J. Multilevel multinomial regression results for different controls sets.

	(1A)		(2A)		(3A)		(4A)		(5A)		(6A)		(7A)	
	Necess.	Opport.	Necess.	Opport.										
Overall openness	-0.271 (0.487)	-0.0329 (0.426)	-0.295 (0.500)	-0.0827 (0.440)	-0.368 (0.436)	-0.231 (0.366)	-1.313*** (0.505)	-0.624 (0.417)	-1.191* (0.702)	-1.404*** (0.483)	-1.535** (0.707)	-1.401*** (0.492)	-1.656** (0.755)	-1.679*** (0.514)
FDI inflows	-0.0190*** (0.00549)	-0.00107 (0.00421)	-0.0140** (0.00558)	-0.000861 (0.00432)	-0.0137*** (0.00513)	0.000117 (0.00349)	-0.00720 (0.00494)	0.00229 (0.00331)	-0.00175 (0.00505)	0.00281 (0.00310)	0.00146 (0.00520)	0.00237 (0.00325)	0.000707 (0.00532)	0.000494 (0.00335)
Foreign bank no.	0.0178*** (0.00288)	0.00865*** (0.00250)	0.0130*** (0.00335)	0.00850*** (0.00290)	0.0110*** (0.00334)	0.00705*** (0.00271)	0.00199 (0.00362)	0.00334 (0.00278)	0.00290 (0.00508)	0.00610* (0.00360)	0.00704 (0.00541)	0.00469 (0.00398)	0.00745 (0.00586)	* (0.00435)
Age	0.0461*** (0.0171)	0.00974 (0.00865)	0.0468*** (0.0171)	0.00961 (0.00864)	0.0488*** (0.0171)	0.00969 (0.00864)	0.0486*** (0.0171)	0.00975 (0.00864)	0.0496*** (0.0171)	0.00972 (0.00865)	0.0499*** (0.0171)	0.00962 (0.00865)	0.0502*** (0.0171)	0.00938 (0.00865)
Age squared	-0.0006*** (0.00021)	-0.0003*** (0.00011)	-0.0006*** (0.00021)	0.0003*** (0.00011)										
Male	0.197*** (0.0569)	0.247*** (0.0289)	0.197*** (0.0569)	0.247*** (0.0289)	0.202*** (0.0570)	0.247*** (0.0289)	0.198*** (0.0570)	0.247*** (0.0289)	0.198*** (0.0569)	0.248*** (0.0289)	0.197*** (0.0569)	0.248*** (0.0289)	0.196*** (0.0569)	0.249*** (0.0289)
Fear of failure	-0.396*** (0.0585)	-0.684*** (0.0318)	-0.400*** (0.0585)	-0.683*** (0.0318)	-0.394*** (0.0585)	-0.682*** (0.0318)	-0.404*** (0.0586)	-0.681*** (0.0318)	-0.412*** (0.0587)	-0.681*** (0.0318)	-0.414*** (0.0587)	-0.681*** (0.0318)	-0.413*** (0.0587)	-0.681*** (0.0318)
Sustainable skills	1.833*** (0.0767)	2.009*** (0.0420)	1.818*** (0.0767)	2.012*** (0.0420)	1.801*** (0.0769)	2.011*** (0.0421)	1.799*** (0.0769)	2.012*** (0.0420)	1.791*** (0.0769)	2.014*** (0.0421)	1.794*** (0.0770)	2.014*** (0.0421)	1.795*** (0.0770)	2.013*** (0.0421)
Secondary educ.	-0.0993 (0.0742)	0.0890** (0.0424)	-0.0784 (0.0743)	0.0838** (0.0425)	-0.0747 (0.0748)	0.0826* (0.0426)	-0.0732 (0.0748)	0.0849** (0.0425)	-0.0663 (0.0754)	0.0804* (0.0425)	-0.0665 (0.0753)	0.0803* (0.0425)	-0.0623 (0.0754)	0.0777* (0.0425)
Tertiary educ.	-0.248*** (0.0703)	0.170*** (0.0385)	-0.219*** (0.0707)	0.164*** (0.0385)	-0.217*** (0.0710)	0.167*** (0.0385)	-0.228*** (0.0711)	0.165*** (0.0385)	-0.247*** (0.0715)	0.167*** (0.0385)	-0.254*** (0.0715)	0.169*** (0.0385)	-0.255*** (0.0716)	0.168*** (0.0385)
Know other entrepreneurs	0.606*** (0.0560)	0.791*** (0.0290)	0.610*** (0.0560)	0.790*** (0.0290)	0.620*** (0.0560)	0.789*** (0.0290)	0.622*** (0.0561)	0.789*** (0.0290)	0.627*** (0.0561)	0.787*** (0.0290)	0.623*** (0.0561)	0.788*** (0.0290)	0.622*** (0.0562)	0.789*** (0.0290)
Full or part-time work	1.293*** (0.146)	1.361*** (0.0717)	1.291*** (0.146)	1.362*** (0.0717)	1.294*** (0.146)	1.360*** (0.0717)	1.300*** (0.146)	1.360*** (0.0716)	1.306*** (0.146)	1.358*** (0.0717)	1.306*** (0.146)	1.358*** (0.0717)	1.307*** (0.146)	1.358*** (0.0717)
Not working	1.360*** (0.153)	0.651*** (0.0815)	1.337*** (0.153)	0.657*** (0.0815)	1.336*** (0.153)	0.654*** (0.0815)	1.340*** (0.153)	0.654*** (0.0815)	1.338*** (0.153)	0.657*** (0.0815)	1.331*** (0.153)	0.659*** (0.0815)	1.330*** (0.153)	0.660*** (0.0815)
Discontinued bus.	1.110*** (0.0991)	0.811*** (0.0621)	1.096*** (0.0992)	0.814*** (0.0621)	1.096*** (0.0994)	0.811*** (0.0621)	1.096*** (0.0994)	0.812*** (0.0621)	1.103*** (0.0995)	0.811*** (0.0621)	1.097*** (0.0995)	0.813*** (0.0621)	1.098*** (0.0995)	0.812*** (0.0621)

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Appendix J (continued). Multilevel multinomial regression results for different controls sets.

	(1A)		(2A)		(3A)		(4A)		(5A)		(6A)		(7A)	
	Necess.	Opport.	Necess.	Opport.	Necessity	Opportunity	Necess.	Opportunity	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.
GDP per capita			-0.0000270*** (0.0000095)	0.00000108 (0.00000771)	-0.0000222** (0.0000103)	0.00000261 (0.00000754)	-0.0000283** (0.0000113)	-0.00000054 (0.0000078)						
GDP/capita quin. 2									-1.394** (0.586)	-0.658 (0.465)	-1.566*** (0.591)	-0.671 (0.468)	-1.595** (0.673)	-1.177** (0.520)
GDP/capita quin. 3									-1.368** (0.578)	-0.112 (0.469)	-1.660*** (0.591)	-0.102 (0.474)	-1.696** (0.662)	-0.598 (0.519)
GDP/capita quin. 4									-1.582** (0.615)	-0.322 (0.497)	-1.870*** (0.627)	-0.342 (0.500)	-1.862*** (0.700)	-0.848 (0.544)
GDP/capita quin. 5									-2.217*** (0.666)	-0.524 (0.529)	-2.419*** (0.673)	-0.567 (0.531)	-2.439*** (0.698)	-0.876 (0.542)
GDP growth		-0.0214 (0.0165)	-0.0151 (0.0141)	-0.00820 (0.0162)	-0.00746 (0.0129)	-0.0333** (0.0166)	-0.0152 (0.0127)							
Long-term unemployment						0.0218*** (0.00505)	0.00899** (0.00402)	0.0136*** (0.00470)	0.00501 (0.00344)	0.0154*** (0.00475)	0.00497 (0.00349)	0.0157*** (0.00481)	0.00526 (0.00346)	
Domestic credit to private sector				0.00523** (0.00247)	-0.000635 (0.00211)	0.00886*** (0.00241)	0.00137 (0.00202)	0.00319 (0.00244)	0.000149 (0.00190)	-0.000527 (0.00281)	0.000864 (0.00218)	-0.000361 (0.00280)	0.00146 (0.00217)	
Bank credit to bank deposit				-0.00728*** (0.00188)	-0.00173 (0.00149)	-0.00832*** (0.00183)	-0.00267* (0.00140)	-0.00448** (0.00211)	-0.00209 (0.00147)	-0.00230 (0.00233)	-0.00259 (0.00169)	-0.00221 (0.00244)	-0.00144 (0.00177)	
Bank deposits				0.00425 (0.00433)	0.00318 (0.00364)	-0.0107** (0.00488)	-0.00418 (0.00401)	-0.0101* (0.00538)	-0.00758* (0.00400)	-0.00115 (0.00645)	-0.00938* (0.00489)	-0.000653 (0.00665)	-0.00805 (0.00506)	
Stock market capitalization				-0.00267 (0.00233)	0.0000969 (0.00163)	-0.00168 (0.00234)	-0.000617 (0.00158)	-0.00524** (0.00231)	-0.000134 (0.00143)	-0.00488** (0.00229)	-0.0000743 (0.00145)	-0.00430* (0.00233)	0.000000389 (0.00145)	
Informal investors rate				0.0447 (0.0272)	0.0598*** (0.0223)	0.0185 (0.0268)	0.0472** (0.0211)	0.0735** (0.0291)	0.0557*** (0.0214)	0.0897*** (0.0299)	0.0538** (0.0221)	0.0942*** (0.0305)	0.0476** (0.0221)	
Financial fragility												-0.00271 (0.00937)	0.00463 (0.00709)	
Financial crisis												0.0345 (0.165)	-0.0615 (0.118)	
Executive constraints								0.336** (0.160)	0.0681 (0.118)	0.345** (0.161)	0.0800 (0.119)	0.341** (0.167)	0.0902 (0.125)	
Cost of business start up proced.								-0.00978 (0.0104)	0.00852 (0.00824)	-0.00196 (0.0109)	0.00782 (0.00876)	0.000680 (0.0114)	0.00309 (0.00887)	
No. of start up procedure								0.107*** (0.0326)	0.0690*** (0.0243)	0.0930*** (0.0333)	0.0703*** (0.0251)	0.0904** (0.0371)	0.0959*** (0.0275)	
Time to complete start up proced.								-0.00338 (0.00395)	-0.0102*** (0.00279)	-0.00653 (0.00407)	-0.00980*** (0.00282)	-0.00557 (0.00558)	-0.0155*** (0.00379)	

(continued on next page)

Appendix J (continued). Multilevel multinomial results for different control sets.

	(1A)		(2A)		(3A)		(4A)		(5A)		(6A)		(7A)	
	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.
Total tax rate													-0.00180	0.0148**
													(0.0102)	(0.00703)
Culture perception									0.0292***	0.00569	0.0240***	0.00692	0.0238**	0.00772
									(0.00910)	(0.00622)	(0.00918)	(0.00631)	(0.00933)	(0.00638)
Baby and established business rate					0.0440***	0.0463***	0.0492***	0.0489***	-0.00690	0.0221*	-0.00733	0.0223*	-0.0126	0.0318**
					(0.0112)	(0.00903)	(0.0110)	(0.00851)	(0.0176)	(0.0128)	(0.0176)	(0.0131)	(0.0196)	(0.0140)
Trade													-0.00772***	0.00159
													(0.00295)	(0.00227)
Labour secondary educ.							0.0158***	0.00681**	0.0226***	0.00659*	0.0215***	0.00683*	0.0218***	0.00630*
							(0.00432)	(0.00337)	(0.00478)	(0.00350)	(0.00478)	(0.00353)	(0.00514)	(0.00366)
Labour tertiary educ.							0.0310***	0.0230***	0.0734***	0.0384***	0.0712***	0.0391***	0.0698***	0.0451***
							(0.0110)	(0.00824)	(0.0130)	(0.00877)	(0.0128)	(0.00883)	(0.0139)	(0.00929)
Industry 1	0.0923**	-0.00628	0.0423	-0.00224	-0.0499	-0.0508	-0.00646	-0.0208	0.0564	0.00808	0.0174	0.0130	0.0101	0.0148
	(0.0406)	(0.0350)	(0.0468)	(0.0407)	(0.0453)	(0.0366)	(0.0437)	(0.0347)	(0.0503)	(0.0358)	(0.0520)	(0.0366)	(0.0560)	(0.0401)
Industry 2	-0.00685	0.0157	-0.0122	0.0150	-0.00392	0.0108	-0.00691	0.0115	0.0252	-0.00203	0.0234	-0.00255	0.0228	-0.00620
	(0.0148)	(0.0120)	(0.0153)	(0.0126)	(0.0149)	(0.0119)	(0.0142)	(0.0112)	(0.0169)	(0.0121)	(0.0169)	(0.0122)	(0.0192)	(0.0143)
Industry 3	-0.0275	-0.00740	-0.0336	-0.00823										
	(0.0249)	(0.0220)	(0.0250)	(0.0220)										
Industry 4	0.0134	-0.0105	-0.00310	-0.0115	-0.0510**	-0.0277	-0.0262	-0.0208	0.00210	-0.0634***	-0.0173	-0.0631***	-0.0207	-0.0495**
	(0.0237)	(0.0209)	(0.0239)	(0.0210)	(0.0225)	(0.0186)	(0.0224)	(0.0178)	(0.0311)	(0.0236)	(0.0316)	(0.0237)	(0.0322)	(0.0239)
Industry 5	0.134	-0.117*	0.229***	-0.126*	0.111	-0.0921	0.0911	-0.128**	0.0196	-0.172***	0.103	-0.187***	0.0934	-0.171***
	(0.0827)	(0.0708)	(0.0888)	(0.0736)	(0.0841)	(0.0669)	(0.0819)	(0.0623)	(0.0835)	(0.0606)	(0.0879)	(0.0636)	(0.0897)	(0.0642)
Industry 6	-0.137***	0.0215	-0.0969**	0.0168	-0.122***	-0.0271	-0.0125	0.0284	0.0860	0.0601	0.0565	0.0697*	0.0476	0.0422
	(0.0429)	(0.0350)	(0.0470)	(0.0389)	(0.0459)	(0.0348)	(0.0512)	(0.0372)	(0.0593)	(0.0408)	(0.0599)	(0.0421)	(0.0613)	(0.0433)
Industry 7	0.0372	0.0242	0.0302	0.0183	0.0368	0.0132	0.0384	0.0163	0.0707**	-0.0118	0.0321	-0.00361	0.0365	-0.0253
	(0.0257)	(0.0222)	(0.0263)	(0.0226)	(0.0276)	(0.0221)	(0.0272)	(0.0207)	(0.0339)	(0.0234)	(0.0363)	(0.0252)	(0.0401)	(0.0276)
Industry 8	0.0484	-0.0221	0.0704	-0.0194										
	(0.0424)	(0.0348)	(0.0432)	(0.0347)										
Industry 9	0.0255	0.0272	-0.000804	0.0210	-0.0128	-0.00731	-0.0347	-0.0111	0.0265	0.0124	0.0170	0.0128	0.0181	-0.00366
	(0.0301)	(0.0252)	(0.0310)	(0.0259)	(0.0277)	(0.0212)	(0.0271)	(0.0198)	(0.0295)	(0.0203)	(0.0299)	(0.0204)	(0.0315)	(0.0216)
Industry 10	0.172***	0.0362	0.184***	0.0294										
	(0.0620)	(0.0496)	(0.0632)	(0.0497)										

(continued on next page)

Note: Industry 1=, Agriculture, forestry and fishing, Industry 2= Manufacturing, mining and quarrying and other industrial activities. Industry 3= Construction, Industry 4= Wholesale & retail trade, transportation & storage, accommodation & food service, Industry 5= Information and communication, Industry 6= Financial and insurance activities, Industry 7= Real estate activities, Industry 8= Professional, scientific, technical, administrative & support service, Industry 9= Public administration & defence, education, human health & social work activities, Industry 10= Other service activities.

Appendix J (continued). Multilevel multinomial results for different control sets.

	(1A)		(2A)		(3A)		(4A)		(5A)		(6A)		(7A)	
	Necess.	Opport.												
Constant	-10.31*** (1.066)	-6.994*** (0.875)	-9.004*** (1.128)	-6.730*** (0.933)	-6.939*** (1.257)	-6.267*** (0.976)	-7.669*** (1.261)	-6.717*** (0.944)	-15.07*** (2.159)	-5.851*** (1.464)	-13.51*** (2.198)	-6.064*** (1.485)	-13.20*** (2.223)	-6.615*** (1.479)
No. of observations	278579		278579		278579		278579		278579		278579		278579	
AIC	61552.06		61539.94		61508.57		61481.93		61439.54		61429.73		61434.23	
BIC	62089.47		62119.5		62151.36		62187.94		62293.07		62304.34		62372.06	
Log likelihood	-30725.03		-30714.97		-30693.29		-30673.96		-30638.77		-30631.87		-30628.11	
Df	51		55		61		67		81		83		89	
Country-year variance	0.1865408		0.1827823		0.1139774		0.0913051		.0632789		.064235		.0609985	
Country-year std	0.0302468		0.0297442		0.0200647		0.0169001		.0132649		.0134012		.0129149	

Appendix K. Results summary.

	Coefficient for NDNE	Coefficient for ODNE
FDI inflows into non-financial sector (MNEs)	- H1a cannot be rejected.	Insignificant
FDI inflows into financial sector (foreign bank presence)	+ H3a cannot be rejected.	+ H4a cannot be rejected.
Portfolio investment inflows	- H5a cannot be rejected.	Insignificant
Cross-border bank lending inflows	- H7a cannot be rejected.	- H8a cannot be rejected.
Remittance inflows	Insignificant	Insignificant
Trade credit outflows	- H11a cannot be rejected	- H11b cannot be rejected
Trade credit inflows	+ Reject H12a	+ H12b cannot be rejected
Overall <i>de jure</i> FI	+ H13a cannot be rejected, but evidence is weak.	+ H13b cannot be rejected.
FI interaction with trade openness	+ H14a, H15a, H16a, 17a cannot be rejected.	+ H14b, H15b, H16b, 17b cannot be rejected.

Appendix L. List of countries.

High-income			Upper-middle income			Lower-middle income		
Country	Obs. (sample 1)	Obs. (sample 2)	Country	Obs. (sample 1)	Obs. (sample 2)	Country	Obs. (sample 1)	Obs. (sample 2)
Australia	3,055	5,738	Argentina	0	9,144	Egypt	0	4,328
Austria	5,109	5,109	Brazil	10,115	20,041	El Salvador	0	1,487
Belgium	14,185	14,185	China	0	13,487	Guatemala	0	3,802
Canada	0	723	Colombia	0	27,541	India	0	3,266
Chile	0	21,255	Costa Rica	1,799	1,799	Indonesia	0	3,263
Czech Rep.	2,906	7,216	Ecuador	1,358	1,358	Nigeria	0	1,366
Denmark	13,157	18,644	Hungary	14,007	14,007	Philippines	0	2,493
Finland	10,414	12,188	Jamaica	0	5,625			
France	13,957	13,957	Kazakhstan	0	851			
Germany	30,682	30,682	Lebanon	0	765			
Greece	11,515	11,515	Malaysia	5,159	8,123			
Hong Kong	0	2,516	Mexico	5,992	12,225			
Iceland	0	5,932	Panama	0	4,223			
Ireland	9,834	9,834	Peru	0	9,024			
Israel	0	7,678	Romania	2,568	4,247			
Italy	12,133	12,133	South Africa	0	10,985			
Japan	0	11,698	Thailand	0	7,300			
Latvia	3,780	3,780	Tunisia	0	1,674			
Netherlands	16,094	16,094	Turkey	24,861	26,807			
New Zealand	889	1,553	Venezuela	0	432			
Norway	2,788	2,788						
Poland	5,678	5,678						
Portugal	2,592	7,646						
Russia	0	13,614						
Saudi Arabia	0	2,583						
Slovenia	13,993	13,993						
South Korea	0	6,839						
Spain	184,928	184,928						
Sweden	26,502	31,605						
Switzerland	8,908	10,250						
USA	3,345	21,179						
Uruguay	0	4,593						
Total	396,444	518,126		65,859	179,658		0	20,005

Note: The World Bank's country classification in 2013 according to country's GNI per capita is used. Sample 1 stands for main sample used in Tables 14. Sample 2 stands for sample with less controls.

Appendix M. Empirical results for models with less controls.

		(1)		(2)		(3)		(4)		(5)	
		Necess.	Opport.	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.	Necess.	Opport.
FDI	FDI inflows (H1, H2)	-0.0177*** (0.00434)	0.000411 (0.00340)	-0.0211*** (0.00453)	-0.00155 (0.00350)	-0.0209*** (0.00450)	-0.000878 (0.00355)	-0.0179*** (0.00441)	-0.000306 (0.00347)	-0.0211*** (0.00451)	-0.000876 (0.00350)
	Foreign bank ratio (H3, H4)	0.0129*** (0.00163)	0.00665*** (0.00148)	-0.000475 (0.00344)	0.00843*** (0.00305)	-0.00221 (0.00315)	0.00516* (0.00286)	-0.00338 (0.00312)	0.00457 (0.00283)	0.000903 (0.00341)	0.00791*** (0.00305)
	Foreign bank ratio x Trade (H14)			0.000143*** (0.0000348)	-0.0000210 (0.0000299)	0.000155*** (0.0000314)	-0.0000015 (0.0000280)	0.000169*** (0.0000311)	0.00000470 (0.0000276)	0.000128*** (0.0000337)	-0.0000141 (0.0000292)
Portfolio investment	Portfolio investment inflow openness (H5, H6)	-0.684*** (0.224)	-0.351* (0.207)	-0.426 (0.500)	-0.849* (0.455)					-0.590*** (0.224)	-0.319 (0.206)
	Portfolio investment net flows (H5, H6)	-0.000898 (0.00354)	-0.00660** (0.00306)	0.0133* (0.00700)	-0.0104* (0.00615)	-0.000160 (0.00365)	-0.00361 (0.00322)	0.00121 (0.00364)	-0.00339 (0.00322)	0.0132* (0.00698)	-0.0105* (0.00612)
	Portfolio invest. inflow openness x Trade (H15)			-0.00335 (0.00627)	0.00787 (0.00558)	-0.00651** (0.00266)	-0.0000562 (0.00242)	0.000113 (0.00152)	0.00154 (0.00140)		
	Portf. investment net flows x Trade (H15)			-0.000141** (0.0000554)	0.0000454 (0.0000495)					-0.000138** (0.0000547)	0.0000465 (0.0000486)
	Financial credits inflow openness (H7, H8)	-0.166 (0.127)	-0.261** (0.120)	-0.0568 (0.313)	0.204 (0.291)	-0.245** (0.109)	-0.243** (0.102)	-0.114 (0.1000)	-0.216** (0.0947)	-0.210* (0.127)	-0.238** (0.119)
Loans from non-resident banks	Offshore bank lending net flows (H7, H8)	0.00258 (0.00925)	-0.00468 (0.00785)	-0.0141 (0.0307)	0.0281 (0.0266)	-0.0317 (0.0282)	0.0243 (0.0244)	-0.0291 (0.0283)	0.0247 (0.0245)	-0.0118 (0.0308)	0.0293 (0.0267)
	Financial credits inflow openness x Trade (H16)			-0.00163 (0.00438)	-0.00707* (0.00400)						
	Offshore loans net flows x Trade (H16)			0.000168 (0.000310)	-0.000388 (0.000272)	0.000334 (0.000282)	-0.000313 (0.000247)	0.000340 (0.000283)	-0.000313 (0.000248)	0.000144 (0.000311)	-0.000397 (0.000273)
Remittances	Remittance inflows (H9, H10)	-0.00920 (0.0118)	-0.0144 (0.0113)	0.00102 (0.0120)	-0.0115 (0.0114)					0.000501 (0.0120)	-0.0138 (0.0114)
	Commercial credits outflow openness (H11)	-0.298*** (0.0903)	0.103 (0.0869)	-0.333*** (0.0921)	0.0955 (0.0884)	-0.371*** (0.0945)	0.0690 (0.0910)	-0.340*** (0.0939)	0.0835 (0.0904)	-0.355*** (0.0917)	0.0695 (0.0880)
Commercial credits	Commercial credits inflow openness (H12)	-0.120 (0.127)	0.204* (0.122)	0.0307 (0.130)	0.221* (0.124)	0.0173 (0.124)	0.257** (0.119)	0.0906 (0.121)	0.286** (0.117)	0.0162 (0.130)	0.222* (0.124)
	Overall inflows openness index (H13)	0.867** (0.368)	0.558 (0.341)	-0.0766 (0.782)	0.217 (0.714)					0.307 (0.435)	0.248 (0.401)
Overall de jure FDI	Overall inflows openness x Trade (H17)			0.0133 (0.00958)	0.00474 (0.00855)	0.0114*** (0.00375)	0.00271 (0.00337)			0.00761** (0.00314)	0.00354 (0.00274)
	Constant	-7.718*** (0.235)	-6.661*** (0.195)	-6.755*** (0.293)	-6.436*** (0.251)	-7.035*** (0.252)	-6.652*** (0.211)	-7.171*** (0.248)	-6.694*** (0.206)	-6.870*** (0.283)	-6.496*** (0.242)
No. of observations		717789		717789		728299		728299		717789	
Df		61		73		63		61		69	
Country-year var. estimate		0.1983419		0.1917345		0.2104143		0.2121765		0.1945932	
Country-year std. err.		0.0174876		0.0169906		0.0181877		0.0183103		0.0172002	

Note: Standard errors in parentheses; ***p<0.01, **p<0.05, *p<0.10. Individual-level and country-year-level controls are included in all specifications.

Chapter 4: Financial integration and financial inclusion

4.1. Introduction

The topic of financial inclusion, defined as the use of formal financial services, has become a subject of growing interest among international bodies, policy-makers, and researchers. For instance, to highlight its importance, the United Nations has put financial inclusion in its Sustainable Development Goals as a critical enabler for achieving sustainable economic growth and employment for all (UN, 2018). G20 leaders have also recognized financial inclusion as one of the main pillars of economic development and consequently, established the Global Partnership for Financial Inclusion (GPFI) in 2010 to promote the financial inclusion movement (GPFI, 2018). There is also a growing literature on financial inclusion, providing evidence for beneficial effects of having deposit bank account on savings (Aportela, 1999), consumption and productive investment of female entrepreneurs (Dupas and Robinson, 2013), economic growth (Dabla-Norris *et al.*, 2015; Sahay *et al.*, 2015), and poverty (Bruhn and Love, 2014; Swamy, 2014). Karlan and Zinman (2010) also report that extended access to consumer credit improves overall borrower outcomes: employment, income, and food consumption.

Given the benefits of financial inclusion, it is important to understand the mechanisms through which it could be promoted. The existing literature has drawn special attention to the importance of borrowers' characteristics (e.g. income, gender) (Demirgüç-Kunt and Klapper, 2012), banking sector condition (e.g. cost of financial products, proximity of banking services) (Allen *et al.*, 2016), economic development (Beck *et al.*, 2007; Sarma and Pais, 2011), and institutions (Beck *et al.*, 2007; Allen *et al.*, 2016) in encouraging financial inclusion. However, little consideration has been given to financial integration, defined as unrestricted movement of capital across borders. While, intuitively, financial integration should increase the availability of formal capital, which in turn could improve financial inclusion, there are limited number of papers dedicated specifically to the analysis of these two phenomena. Among general studies on determinants of financial inclusion, only Beck *et al.* (2007) and Sarma and Pais (2011) consider the impact of foreign direct investment (FDI) into financial sector, proxied by foreign bank presence, on financial inclusion in their cross-sectional analysis. The impact of remittance inflows on households' deposit accounts has gained more researchers' attention. In essence, Ayana Aga and Martinez Peria (2014) and Brown *et al.* (2013) conduct a cross-sectional analysis for 5 Sub-Saharan and 2 CIS countries, respectively. The similar investigation is carried out by Anzoategui *et al.* (2014) for El Salvador and Demirgüç-Kunt *et al.* (2011) for Mexico. Needless to say, the multidimensional aspect of

financial integration, and the importance of jointly analysing its different types' effects, are not taken into account in these studies. Moreover, they all conduct a cross-sectional (on no more than 50 countries) or country-specific investigations, raising the concern of the universality of their results. Finally, not all papers address the potential issue of reverse causality.

To fill in the gap in the literature, this study examines the effects of different types of financial integration on financial inclusion. We recognize the importance of distinguishing between *de jure* (i.e. lifting up capital account restrictions) and *de facto* (i.e. actually capital flows) financial integration. Among *de facto* financial integration, we also differentiate between three types of capital flows: FDI into non-financial sector, FDI into financial sector, and remittance inflows. While there are other flows types (i.e. portfolio investments, offshore bank lending), we believe that they are less likely to have a direct impact on financial inclusion and hence, they are not a main subject of our analysis. Unlike previous studies on the topic, we have also decided to look at the financial inclusion of households and SMEs separately. This is dictated by the fact that these two user groups of formal financial services might be affected by financial integration through different mechanisms. Finally, as financial integration is widely believed to increase the available formal capital pool, we focus only on the use of capital as a measure of financial inclusion. The remaining dimensions of this phenomenon (e.g. the use of saving/deposit accounts) is out of scope of this study.

Based on the panel of 33 countries in the period 2004-2013 and using instrumental variable methodology to address potential endogeneity issues, we find evidence that financial integration affects both households' and SMEs' financial inclusion. *De facto* financial integration measures appear to have similar effects on both types of formal capital users. In essence, foreign direct investment into non-financial sectors turns out to have a negative association with the households' and SMEs' possession of loan accounts. We attribute these findings to the crowding out and labour effects of Multinational Enterprises (MNEs) (see next section for details). Foreign bank presence, on the other hand, appears to be beneficial, albeit the evidence for SMEs is very weak. Remittance inflows is found to substantially improve the number of household loan accounts, probably thanks to increased financial literacy among remittance-receiving households, as well as banks' ability to distribute increased deposits from remittances to new customers. However, this type of flows does not appear to affect the number of SMEs' loan accounts. The remaining types of flows, portfolio investment and offshore bank lending, also do not have effect on households' and SMEs' borrowing. Finally, *de jure* financial integration seems to significantly boost the number of loan account, but the evidence for SMEs is, again, relatively weak. Comparing the absolute magnitudes of the

reported results, we can conclude that the net effect of financial integration on financial inclusion is positive for households. No such strong conclusion can be made for SMEs.

The remaining paper is structured as follows. Section 4.2 presents the mechanisms through which main types of financial integration considered in this chapter (i.e. FDI into non-financial sector, FDI into financial sector, remittance inflows, *de jure* financial integration) can affect financial inclusion. Section 4.3 describes the data used in the analysis. The methodology and discussion on potential endogeneity issues are presented in Section 4.4, followed by the empirical results in Section 4.5. The final section concludes, providing agenda for future studies and recommendations for policy-makers.

4.2. Theoretical framework

There seems to be a consensus in the existing literature that foreign banks bring capital, technology, and know-how, but it is still unclear whether they improve financial access of households and firms (Beck et al., 2009). As mentioned in Chapter 3, foreign banks have better risk diversification and economies of scale and scope, being simultaneously immune to political pressure. As a result, they could be more willing to take risk and issue loans to opaque borrowers. Foreign banks can also indirectly benefit financial inclusion by forcing domestic banks to shift their capital allocation towards opaque borrowers, a phenomenon called flight to captivity by Dell’Ariccia and Marquez (2004). While, to the best of our knowledge, there are no empirical evidence on positive impact of foreign bank presence on household loans, such effect on SMEs has been reported in some studies. For example, Torre *et al.* (2010), using data from bank and SME surveys in four countries, find that all banks, including large and foreign ones, consider SMEs to be a strategic sector and have a significant credit exposure to this segment. Based on the surveys of firms from 35 developing countries, Clarke *et al.* (2006) provide evidence that higher foreign bank participation improves accessibility of external financing for all firms, including SMEs.

On the other hand, foreign banks may adapt a cream-skimming practice and direct their capital stream to larger firms and high net worth individuals⁵⁹. Mian (2006) investigates 80,000 business loans over 7 years in Pakistan and concludes that the avoidance of foreign firms to lend to “informally difficult” firms is caused by cultural and geographical distance between their headquarters and local branches. The affected firms include, inter alia, small firms and those seeking first-time loans. Sarma and Pais (2011) find that high share of foreign ownership in the banking sector reduces financial inclusion index,

⁵⁹ See Chapter 3 for the description of the cream-skimming theory developed by Detragiache et al. (2008).

computed using four measures for 49 countries in 2004: number of bank accounts, bank branches, and ATMs, as well as volume of credit plus deposit. The work closer to ours is Beck *et al.* (2007), who, by conducting a cross-section analysis of 44 countries, report that there is a negative association between foreign banks and number of loan accounts.

When the role of foreign banks in facilitating/hampering usage of formal capital has been explored in the literature, to the best of our knowledge, there are no studies on the effect of non-financial sector FDI on financial inclusion. This could be due to the fact that the potential impacts of MNEs on formal capital users are not as clear as the foreign banks' ones. In our view, MNEs can be associated with a crowding-out effect as they can tap into the available pool of formal capital. In fact, MNEs can take the lion share of foreign banks' loans portfolio. This is caused by the fact that the main reason behind foreign banks' entry could be a willingness to follow their MNEs clients to continue offering their financial services (i.e. "follow the customer" hypothesis⁶⁰). Domestic banks are also more likely to issue loans to MNEs, who can provide collateral and sound investment prospects thanks to their mother company's support. As a result, the available credit to private sector, even if increased thanks to foreign bank entry, is shifted towards MNEs, hurting both households and entrepreneurial firms.

MNEs can also affect financial inclusion of households through labour market effect. There is a widespread view in the literature that the employment effects of MNEs depend on their mode of entry. Williams (2003), for example, reports that firms entering by way of greenfield investment in the UK have positive employment effects, while M&A has relatively negative effects. Hence, if MNEs create new jobs through greenfield investments, they would provide a source of steady income to households. As a result, the chances of the latter to receive bank loans increase, improving financial inclusion. Such steady income can also have the opposite effect, as it can reduce households' financial constraints, reducing their demands for bank loans. On the other hand, MNEs can reduce (mainly unskilled) job availability if they enter the market through merger and acquisition (M&A), restructuring the newly acquired domestic firms. The loss of jobs could in turn reduce the financial inclusion of the affected households.

Unlike non-financial sector FDI, the third type of the international financial flows, remittances, has attracted some researchers interest. As mentioned in Chapter 3, Aggarwal *et al.* (2011) and Demirgüç-Kunt *et al.* (2011) identify potential effects of remittances on recipient-country's financial sector. They suggest that the relatively high

⁶⁰ There is a well-established body of empirical literature supporting this hypothesis (e.g. Nigh *et al.* (1986) for US banks, Yamori (1998) for Japanese banks, Petrou (2007) for multinational banks from developing countries).

fixed cost of international cash transfers can cause remittances to be irregular and lumpy. Hence, unbanked recipient-households are more likely to start using bank deposits to better manage the remittance receipts. The existing empirical studies seem to support this view. Ayana Aga and Martinez Peria (2014), for example, using household data in 5 Sub-Saharan countries, report that receiving remittances increases the households' probability of opening a deposit account. The similar result is found by Anzoategui *et al.* (2014) for El Salvador based on household surveys from the period 1995-2001, as well as by Demirgüç-Kunt *et al.* (2011) for Mexico's roughly 2500 municipalities in 2000. Brown *et al.* (2013), however, obtain mixed evidence for two CIS countries. The positive, but weak effect of remittances on the likelihood of holding a bank account is found in Kyrgyzstan only. In the case of Azerbaijan, remittances reduce such likelihood. Brown *et al.* (2013) explain the counter-intuitive results with the recipient-households' fear of their earnings and related financial transactions being recorded by authorities. In contrast to households, to the best of our knowledge, there is no empirical study on the effect of remittances on SMEs' deposit account.

The increased use of deposit accounts can lead to higher use of loan accounts. First, more deposits provide banks with capital, which can be used for lending to new customers. Second, according to the financial literacy hypothesis, remittance-receiving households are more exposed to the formal financial sector and become more aware of the available banking services (Brown *et al.*, 2013). In other words, by using remittance transfer services and/or deposit accounts, households can start using other banking products and services, including loans. Third, banks can improve remittance-receiving households' access to loans by monitoring their deposit accounts and using their income information in loan application assessments. However, remittances can relax household's and SME's financing constraints, reducing a demand for credit. In fact, Anzoategui *et al.* (2014) and Demirguc-Kunt *et al.* (2011), the only empirical papers considering the effect of remittances on loan accounts, find no evidence of remittances influence on the households' demand for and use of credit from formal institutions. Following Demirguc-Kunt *et al.* (2011)'s line of reasoning, the negative effect could be offset if banks efficiently channel remittance deposits to new private customers.

Despite the importance of *de jure* financial integration, which has been empirically shown in Chapters 2 and 3, its effect on financial inclusion has not been investigated in the literature. Lifting capital account restrictions should increase access to bank loans. This is caused by the fact that financial liberalization can have a strong disciplining effect. Domestic banks, who anticipate increased foreign competition, become more willing to consider applications from and offer loans to opaque borrowers. This phenomenon is called flight to captivity.

In summary, the existing empirical literature does not provide sufficient evidence for the financial integration-financial inclusion relationship. Only two types of international flows have been briefly explored (i.e. foreign bank assets and remittances), while the effects of other types of financial integration has been neglected. Furthermore, researchers either do not distinguish between financial inclusion of households and SMEs or tend to focus on just one of the two. This is, in case of foreign bank presence, the focus is primarily on SMEs. Households become a focal point when effects of remittances are considered. Furthermore, the majority of papers investigate only one measure of financial inclusion (i.e. deposit accounts), failing to explore usage of loan accounts, a more important measure from the financial integration-financial inclusion relationship standpoint. Finally, none of the studies uses a cross-country and cross-time dataset, which can potentially provide better evidence of the financial inclusion effect on financial inclusion.

4.3. Data

The variables used in this chapter, together with their definitions and sources are provided in Table 15. Their advantages and limitations are described in more details below.

In this study, the data on financial inclusion comes from the Financial Access Survey maintained by the IMF. As mentioned in Chapter 1, the FAS is the only available cross-country supply-side database, which provides a clear distinction between two types of financial products and services users: households and SMEs. Such distinction allows to separately examine how financial integration affects two user groups that are most likely to be financially excluded. The focus of this chapter is on one of the most cited effects of financial integration: an increase of formal capital availability. Hence, we aim to select financial inclusion measures that capture the usage of formal capital. The FAS offers four measures that meet our requirement: number of household loan accounts per 1000 adults, number of household borrowers per 1000 adults, number of SME loan accounts as share of non-financial institutions, and number of SME borrowers as share of non-financial institutions. The number of loan accounts seem to be a less accurate proxy for the formal capital usage as one individual or firm can have more than one loan. However, after checking the unconditional correlation between these variables for our sample (see correlation matrix in Table 17), we can conclude that both types of measures are equally good proxies for formal capital usage. In essence, the correlation between number of household loan accounts and borrowers is 79.57%, while for SMEs is 80.70%. This finding is in line with Beck *et al.* (2007), who also report high correlation between these measures. As there is more data available on number of loan accounts compared to

number of borrowers (see summary statistics in Table 16), we decide to use the former as our dependent variables to maximize the number of observations⁶¹.

Despite being one of the earliest developed cross-country financial inclusion database, the FAS is still relatively young and offers data only from 2004. This, combined with a limited country coverage of the selected financial inclusion measures, allows to construct a panel dataset of a maximum of 247 observations in 33 countries in the period 2004-2013 for households. In case of SMEs, the dataset is more modest, containing a maximum of 167 observations in 27 countries in the same period. Although at the time of writing the financial inclusion data is available until 2015, the data on foreign bank presence (described below) has not been updated since 2013, which reduces our time span to 2004-2013.

Similarly to previous empirical chapters, we use a combination of *de jure* and *de facto* FI measures (see Table 15). *De jure* measure selected in this study, KAOPEN, is an overall financial openness index developed by Chinn and Ito (2006). It provides a better country-year coverage compared to the alternative capital flows restriction index, KA, provided by Fernández *et al.* (2015). Four main *de facto* FI variables (i.e. FDI inflows, foreign bank assets, foreign bank number, and remittance inflows) come from two World Bank's datasets: World Development Indicators (WDI), and Global Financial Development Database (GFDD). The separation of FDI inflows and foreign bank presence measures allows the former to capture mainly MNEs entry, differentiating the effects of financial and non-financial sector FDI. Although bank assets are a better proxy for foreign bank presence, we also use foreign bank number, which has a slightly better country-year coverage, as an alternative measure in our empirical evaluation. Our other *de facto* FI measure, remittance inflows, is associated more with cross-border migration than financial integration in the literature. However, it is still a substantial part of international capital flows, and hence, to some extent, can provide some information on financial integration. The drawback of the available data on remittances, as mentioned in Chapter 3, is that they only capture those flows that come in through formal channels. This means that, in reality, the size of remittances inflows is much higher than the official measures suggest. Finally, we also include portfolio investment and offshore bank lending in our analysis. The former is proxied by portfolio investment net flows (% of GDP), while the

⁶¹ This is particularly important given (1) the limited availability of financial inclusion data in general and (2) the inclusion of endogenous variables in our model that requires the use of instrumental-variable technique, which results in the application of a large number of instruments (see next section for more details).

Table 15. List of variables.

Variable	Definition	Source
Household loan accounts per 1000 adults	Loan accounts with commercial banks owned by households. <i>Calculated as: (number of household loan accounts with commercial banks)*1,000/adult population in the reporting country.</i>	Financial Access Survey (IMF)
SME loan accounts (% of non-financial institutions)	Loan accounts with commercial banks owned by non-financial small and medium enterprises. <i>Calculated as: (number of loan accounts by SMEs with commercial banks)/(number of loan accounts with commercial banks - number of loan accounts by households with commercial banks).</i>	Financial Access Survey (IMF)
KAOPEN	A composite measure using 4 binary measures of government restrictions reported in IMF's <i>Annual Report on Exchange Rate Arrangements and Exchange Restrictions (AREAER)</i> : the openness of a country's capital account, the openness of the current account, the stringency of requirements for the repatriation and/or surrender of export proceeds, and the existence of multiple exchange rates for capital account transactions. Normalized to the range 0-1.	Chinn & Ito (2013)
Foreign direct inflows (% of GDP)	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments.	WDI
Foreign bank assets among total bank assets (%)	Percentage of the total banking assets that are held by foreign banks. A foreign bank is a bank where 50 percent or more of its shares are owned by foreigners.	GFDD
Foreign banks number among total banks (%)	Percentage of the number of foreign owned banks to the number of the total banks in an economy. A foreign bank is a bank where 50 percent or more of its shares are owned by foreigners.	GFDD
Remittance inflows (% of GDP)	A sum of 3 items defined in the IMF's Balance of Payments Manual, 5th edition: workers' remittances (i.e. current private transfers from migrant workers resident in the host country for more than a year to recipients in their country of origin), compensation of employees (i.e. income of migrants who have lived in the host country for less than a year), and migrants' transfers (i.e. net worth of migrants who are expected to remain in the host country for more than one year that is transferred from one country to another at the time of migration).	GFDD
Portfolio investment, net (% of GDP)	Portfolio investment covers transactions in equity securities and debt securities. This series is a difference between inflows and outflows.	WDI
Loans from non-resident banks (amount outstanding, % of GDP)	Loans from non-resident banks to GDP is the ratio of a country's loans of Bank for International Settlements (BIS) reporting banks to the country's economic activity. THE BIS reporting banks reside in: Australia, Austria, the Bahamas, Bahrain, Bermuda, Brazil, Cayman Islands, Chile, Denmark, Finland, Greece, Guernsey, Hong Kong, India, Ireland, Isle of Man, Jersey, Korea, Luxembourg, Macao, Malaysia, Mexico, the Netherlands Antilles, Norway, Panama, Portugal, Singapore, Spain, Taiwan, and Turkey.	GFDD
GDP per capita, PPP (constant 2011 international \$), natural log	Proxy for income level. GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2011 international dollars.	WDI
Primary school enrolment (% net)	The ratio of children of official school age who are enrolled in school to the population of the corresponding official school age.	WDI
Executive constraints	Refers to the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities. Such limitations may be imposed by any "accountability groups" (i.e. legislatures; the ruling party in a one-party state; councils of nobles or powerful advisors in monarchies; the military in coup-prone polities; and in many states a strong, independent judiciary)	Polity IV
ATMs per 100,000 adults	Denotes the number of automatic teller machines for every 100,000 adults in the reporting country. Proxy for availability of financial services (another dimension of financial inclusion).	Financial Access Survey (IMF)
Branches of commercial banks per 100,000 adults	Denotes the number of branches of commercial banks for every 100,000 adults in the reporting country. Proxy for availability of financial services (another dimension of financial inclusion).	Financial Access Survey (IMF)
Bank concentration	Country's assets of five largest commercial banks as a share of total commercial banking assets, which includes total earning assets, cash and due from banks, foreclosed real estate, fixed assets, goodwill, other intangibles, current tax assets, deferred tax assets, discontinued operations and other assets. Proxy for competition in the banking sector.	GFDD
Bank nonperforming loans to total gross loans (%)	The value of nonperforming loans divided by the total value of the loan portfolio (including nonperforming loans before the deduction of specific loan-loss provisions). The loan amount recorded as nonperforming should be the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue. Proxy for health of banking system.	GFDD

latter is proxied by amount outstanding of loans from non-resident bank (% of GDP)⁶². Both measures come from WDI and GFDD, respectively.

A set of control variables is also included to avoid omitted variable bias. The literature suggests a large number of individual and bank characteristics that affect financial inclusion. For example, Demirgüç-Kunt and Klapper (2012), using Global FINDEX data identify the self-reported barriers to be, *inter alia*: income, cost of financial products and services, distance from a bank, lack of necessary documentation, and lack of trust as barriers to financial inclusion. However, as the dependent variables used in this study are country-level, we can only consider country characteristics in the analysis. Among the limited number of literature on country-level determinants of financial inclusion, the majority focuses on saving/deposit accounts as financial inclusion measure (e.g. Karlan *et al.*, 2014; Allen *et al.*, 2016). The only exception is Beck *et al.* (2007), where the number and value of loan accounts are also used as measures of financial inclusion. Sarma and Pais (2011) also account for loan accounts by including them in the computation of their financial inclusion index.

Hence, we rely loosely on the literature to create our own set of controls, which we believe affect the use of formal loans. The list of these controls is included in Table 20. The first variable is economic development, proxied by natural logarithm of GDP per capita. Intuitively, higher income at both individual and country level should increase the use of formal accounts. This is in line with Demirguc-Kunt and Klapper (2012), who report income to be one of the main determinants of financial inclusion. Similarly, Sarma and Pais (2011) show that among socio-economic factors, GDP per capita explains financial inclusion almost single handed. More specifically, Beck *et al.* (2007) find that GDP per capita is positively associated with both the number and value of loan accounts.

The population literacy, proxied by primary school enrolment rate, is also included as a control. It is believed that higher literacy level should help with collecting documentation required to open a bank account, one of the barriers identified by Demirguc-Kunt and Klapper (2012). Sarma and Pais (2011) find adult literacy to be positively affect financial integration index, but only when GDP per capita is removed from the regression.

Institutions have also been identified to play an important role in encouraging financial inclusion. Allen *et al.* (2016) find political risk rating index from ICRG and legal rights index from the World bank to be positive and statistically significant in determining the likelihood of owning a saving account. Beck *et al.* (2007) report similar results for a

⁶² As discussed in Chapter 2, there is also other relevant measure: net flows of loans from non-resident banks (% of GDP). However, this measure has a limited coverage, and its inclusion in our analysis would drop the smallest household sample from 199 to 146, and the SMEs' smallest sample from 137 to 68.

number of loan accounts, using governance index from the World Governance Indicators. Unlike the predecessors, we choose to focus on one dimension of institutions: property rights institutions (i.e. institutions constraining government and elite expropriation). As noted by Acemoglu and Johnson (2005), weak property rights institutions have more far-reaching consequences than contracting institutions (i.e. institutions supporting private contract). In essence, if lenders have difficulty in collecting on their loans due to weak contracting institutions, they can overcome this obstacle by developing a better monitoring practice. Following Acemoglu and Johnson (2005), the property rights institutions is proxied by the indicator of efficient constraints on the arbitrary power of the executive branch of the government developed by Polity IV. Intuitively, the lower risk of expropriation from the government or other powerful group leads to banks' higher freedom in capital allocation. In case of low constraints on executives, financial institutions could be pressured to provide capital to specific sectors of economy, or to government as a result of financial repression. Furthermore, if private citizens or firms do not have adequate security of property rights, they can struggle to provide quality collateral for loans. As a result, we expect high property rights institutions to boost financial inclusion of both households and SMEs.

Next, a series of banking sector-related measures are considered. As suggested and empirically proved in the literature, a proximity to and accessibility of banking services, captured by ATMs and bank branches penetration measures, are important determinants of the use of bank accounts (e.g. Allen et al., 2016). The main limitation of using area- and population-based ratios of the number of ATMs and branches is the assumption that there is a uniform distribution of bank outlets within country's area/population (Beck *et al.*, 2007). In reality, ATMs and bank branches tend to be concentrated in bigger cities. Despite this drawback, these measures remain the best country-level indicators of proximity and availability of banking services available and hence, are used as controls in this study.

Another measure related to the condition of the banking sector used in this research is bank concentration, proxied by a ratio of country's assets of the five largest commercial banks to total commercial banking assets. As mentioned by Demirguc-Kunt and Klapper (2012), fixed fees and high costs of opening and maintaining accounts are identified as important barriers to financial inclusion. They also suggest that the high fees and costs could reflect a lack of competition in the banking sector. Hence, the use of bank concentration should directly capture the competition level in the banking sector, while indirectly proxying for transaction and bank account costs. The higher the bank concentration, the lower the banking competition and higher costs associated with bank account possession, leading to reduced financial inclusion.

The health of banking sector is also captured by including bank's level of non-performing loans (NPL), which shows the sum of borrowed money upon which the debtor has not made scheduled payments. Intuitively, the higher the NPL, the less willing are the banks to issue loans to opaque customers, decreasing financial inclusion. This view is supported by Sarma and Pais (2011) findings, who report a negative association between NPL and financial inclusion index.

Table 16. Summary statistics.

Variable	Prior sign	Obs.	Mean	Median	Std. Dev.	Min	Max
Household loan accounts (no. per 1000 adults)		249	408.06	338.44	311.06	5.60	1915.20
Household borrowers (no. per 1000 adults)		152	250.98	232.69	149.24	17.97	674.61
SME loan accounts (% of non-financial firms)		167	61.20	70.29	34.82	1.05	100.00
SME borrowers (% of non-financial firms)		104	62.56	84.13	36.80	3.11	100.00
KAOPEN (0 - 1)	+	249	0.67	0.70	0.34	0	1
FDI inflows (% of GDP)	?	249	5.13	3.39	6.67	-15.99	47.48
Foreign bank assets among total bank assets (%)	?	236	36.22	25.00	29.72	0	100
Foreign banks number among total banks (%)	?	249	38.97	39.00	24.08	0	87
Remittance inflows (% of GDP)	?	249	3.15	1.43	5.02	0	27.44
Portfolio investment net flows (% of GDP)	?	249	0.12	-0.24	5.63	-18.33	52.23
Offshore bank lending (amount outstanding, % of GDP)	?	249	17.22	7.01	26.15	0.61	171.16
GDP per capita (natural log)	+	249	9.57	9.62	0.70	7.38	11.26
Primary school enrolment (% net)	+	212	93.17	94.91	6.61	66.08	99.91
Constraints on executive (0-7)	+	249	5.96	6.00	1.42	1	7
ATMs per 100,000 adults	+	240	56.80	49.80	39.87	0.13	191.12
Branches per 1000,000 adults	+	248	25.57	16.04	24.28	2.9	142.19
Bank concentration (%)	-	249	75.40	76.14	15.54	39.37	100
NPL (%)	-	249	5.31	3.47	4.57	0.2	31.9

Finally, we include year dummies in all our regressions to capture the potential effect of the 2007/2008 financial crisis on the use of loan accounts. According to the bank lending supply shock theory, crisis reduces the supply of credit as bank losses from "toxic" assets decreases the issuance of loans (Kahle and Stulz, 2013). This theory seems to be supported by the data. For example, Ardic *et al.* (2011) report that, while the world as a whole added 65 deposit accounts per 1000 adults in 2009 compared to 2008, the number of outstanding loans remained more or less the same.

The summary statistics for all variables and their expected signs are presented in Table 16. Looking at the dependent variables, it can be seen that the data on SME loan

Table 17. Correlation matrix.

	Household loan accounts	Household borrowers	SME loan accounts	SME borrowers	KAOPEN	FDI inflows	Foreign bank assets	Foreign banks number	Remittan ce inflows	Portfolio investme nt net flows	Offshore loans (amount out.)	GDP per capita	Primary school enrol.	Executive constraints	ATM penet.	Branch penet.	Bank con.	NPL
Household loan accounts	1																	
Household borrowers	0.7957	1																
SME loan accounts	0.4402	0.3456	1															
SME borrowers	0.3382	0.3182	0.807	1														
KAOPEN	0.2628	0.2662	0.612	0.3843	1													
FDI inflows	0.1347	0.1661	0.062	0.0284	0.223	1												
Foreign bank assets	0.0979	0.1931	0.197	-0.149	0.1949	0.186	1											
Foreign banks number	0.2153	0.2663	0.16	0.0834	0.1542	0.269	0.8646	1										
Remittance inflows	-0.3068	-0.1509	-0.034	-0.227	0.0483	0.157	0.1404	0.1993	1									
Portfolio invest. net flows	-0.0545	-0.249	-0.224	-0.253	-0.0046	0.123	0.0386	0.0011	-0.1071	1								
Offshore loans (amount out.)	0.4962	0.5563	0.169	0.1213	0.3562	0.215	-0.261	-0.1586	-0.2506	0.094	1							
GDP per capita	0.5742	0.6268	0.64	0.4851	0.4988	0.089	-0.0975	-0.1524	-0.4763	0.0499	0.5095	1						
Primary school enrol.	0.352	0.4373	0.233	0.3807	0.401	0.063	-0.1318	-0.0866	-0.319	-0.0666	0.3395	0.6186	1					
Executive constraints	0.3115	0.2883	0.298	0.4936	0.2591	0.007	0.214	0.2094	-0.2669	-0.037	0.3164	0.1929	0.2561	1				
ATM penetration	0.4953	0.5006	0.5	0.3546	0.4508	0.009	-0.0893	-0.1728	-0.3155	-0.0197	0.4645	0.7027	0.541	0.3415	1			
Branch penetration	0.3218	0.2662	0.236	0.1185	0.3802	0.1	-0.0226	-0.0496	-0.1467	-0.0872	0.4457	0.4131	0.3279	0.3485	0.6219	1		
Bank concentration	0.2296	0.0147	0.149	-0.418	0.2636	0.286	0.1668	0.1306	0.0845	0.2104	0.2204	0.155	-0.1869	-0.2302	0.0685	-0.0118	1	
NPL	0.0116	0.0941	0.034	0.0393	0.0627	-0.23	0.0207	0.0927	0.1424	0.14	0.175	-0.0998	-0.2801	0.0712	-0.0362	0.0698	0.1026	1

Note: The correlation matrix is computed for the sample of 33 countries in the period 2004-2013, which is the data available for household loan accounts. As the SMEs' sample is different (27 slightly different countries in 2004-2013), we also check a correlation matrix for this sample. The results are similar to the ones reported in this Table.

accounts is much more limited compared to the household ones. Hence, it will not be possible to directly compare the empirical results on the loan accounts of the two types of users due to a different sample composition. Furthermore, as mentioned earlier, the availability of data on number of borrowers is much lower than the number of accounts, which motivates us to use the latter in the empirical analysis. The descriptive statistics also reveal that there should not be any major outlier in the case of dependent variables. The exception could potentially be the number of household accounts, which has a relatively high maximum number compared to the rest of statistics (1915.20 accounts per 1000 adults, with the median being only 338.44). We will explore this potential outliers issue in our robustness check section.

The correlation matrix presented in Table 17 shows that there is no high unconditional pairwise correlation between all variables, apart from those that will be used interchangeably in the regressions (i.e. foreign bank presence measures). Hence, they can be used jointly in the regressions.

4.4. Methodology

The following empirical model is tested:

$$FInc_{i,t} = \beta_1 DJFI_{i,t} + \beta_2 DFFI_{i,t} + \beta_3 CV_{i,t} + \varepsilon_{i,t} \quad (8)$$

Where i stands for country, t stands for period, $FInc$ is financial inclusion variable (number of household deposit account, number of SMEs deposit account), $DJFI$ is *de jure* financial integration variable, $DFFI$ is a vector of *de facto* financial integration variables, CV is a vector of various control variables, and ε is an error term.

From the econometrics perspective, the main concern in this study is the endogeneity issue caused by reverse causality between the dependent variables and some of the regressors. The existing literature suggests a set of potentially endogenous variables that we will discuss below, explaining the mechanisms through which financial inclusion could affect them, before explicitly addressing this reverse causality in our empirical strategy.

Among financial integration measures, remittance inflows are often mentioned to be affected by financial inclusion. As noted by Ayana Aga and Martinez Peria (2014), having a deposit bank account may reduce the cost of receiving international remittances, which in turn increases the probability of receiving them. Furthermore, a possession of formal bank account can make receiving remittances more convenient and secure than using informal channels, increasing the volume of this type of capital inflows. However, as this

study focuses solely on loan accounts, we also offer a different explanation for the possible reversal causality. The possession of formal loans, which need to be repaid in accordance with a pre-set schedule, can increase remittance inflows to the struggling households and SMEs. In this case, the higher number of loan accounts induces higher remittance inflows.

We also believe that *de jure* financial integration can be impacted by financial inclusion. In the case of households and firms' limited access to formal capital, government could be more willing to relax the restrictions imposed on international capital inflows. By doing so, it could increase the availability of capital, which could be distributed to new banking sector users. As a result, KAOPEN, in conjunction with remittance inflows, is treated to be an endogenous variable in our analysis.

Financial inclusion has also been linked to economic development and growth in the literature. Sahay *et al.* (2015) have shown that greater access to finance leads to a set of macroeconomic outcomes, including economic growth. Dabla-Norris *et al.* (2015), using a general equilibrium model, illustrate how increasing firms' access to credit, through lowering monitoring costs and relaxing collateral requirements, boost growth. Demirguc-Kunt *et al.* (2017) review the recent empirical evidence on the impact of the use of microfinancing on inclusive growth and economic development. They conclude that the evidenced positive relationship is very modest. Given the widespread view, although not necessarily supported by empirical evidence, that financial inclusion improves economic development and growth, we treat natural logarithm of GDP per capita, one of our control variables, as an endogenous regressor.

Financial inclusion does not always bring positive effects. In fact, the literature has associated it with increased financial sector instability. Dabla-Norris *et al.* (2015), for example, show that firms' expanded access to credit could raise non-performing loans in banks. Sahay *et al.* (2015) suggests that this could be caused by reduced screening and monitoring standards and call the resulted increase in access to capital "bad" financial inclusion. Since financial inclusion can affect the health of the financial sector, the proxy of the latter used in this study (i.e. NPL) is assumed to be endogenous.

Finally, we also suspect property rights institutions to be potentially endogenous. Allen *et al.* (2016), for example, acknowledge the potential endogeneity issue in their study on determinants of financial inclusion, such as legal rights and formal institutions. They suggest that the distribution of financial inclusion outcomes could influence policies. Hence, we believe that low access to formal capital can encourage an adoption of better

property rights protection, which in turn could increase banks' freedom in capital allocation and improve protection of individuals' and firms' collateral protection.

The treatment of the abovementioned endogeneity issues in the relevant empirical literature is diverse. Some researchers do not recognize the problem or decide to ignore and acknowledge it to be a limitation of their paper (e.g. Beck *et al.*, 2007, Sarma and Pais, 2011). In some studies, the reverse causality between remittances and financial inclusion is tackled by using instrumental variables econometric approach with external instruments. Ayana Aga and Martinez Peria (2014), for example, select indicators of the migrants' economic conditions in the destination countries as instruments in their analysis of the household deposit accounts usage. Demirgüç-Kunt *et al.* (2011) also use a series of instruments in their study of household deposit and credit accounts usage in Mexico: economic conditions in migration recipient US states, Mexico's municipality measures of the importance of remittances, and lagged values of remittances. Allen *et al.* (2016) also use instrumental variable estimations of the likelihood of owning an account to address the simultaneity issue between financial inclusion and policies. They select the adoption of policies in neighbouring countries as an instrument for the policies in place in a country.

In this study, we also apply instrumental variable estimation approach (IV) to address endogeneity. However, the presence of a large number of endogenous variables in this paper makes it challenging to identify an appropriate set of external instruments. Instead, we decide to use lagged regressors as instruments thanks to the data availability in the time dimension. The attraction of this approach is a reasonably high correlation between instruments and the variables being instrumented (Cameron and Trivedi, 2010). Furthermore, we apply the generalized method of moments (GMM) estimator instead of the more popular two-stage least squares (2SLS). This is dictated by the fact that GMM is a more efficient estimator when errors are independent, but heteroskedastic. Despite our best attempt to include all relevant regressors in the model, we are aware that some important variables could be omitted⁶³, which causes (impure) heteroskedasticity.

4.5. Empirical results

4.5.1. Household loans

The empirical results for household loan accounts are presented in Table 18. It is striking that our main financial integration variables appear to be statistically significant in most,

⁶³ For example, we do not possess data on the cost of banking services, which have been identified as one of the reasons of not having bank accounts in the literature. We only indirectly proxy for these costs by using bank concentration measure in our model, which might not be sufficient.

if not all specifications. The positive sign of the financial openness measure, KAOPEN, is in line with our expectation. Surprisingly, the magnitude of KAOPEN appears to be relatively high, with a shift from full to no restrictions causing an increase in the number of household accounts by up to 273.3 per 1000 adults (model 1). This indicates that lifting restrictions on international capital flows has a substantial disciplining effect on the domestic banking sector, which in turn improves financial inclusion of households.

Among actual capital flows measures, only remittance inflows are found to have a positive relationship with households' financial inclusion. This finding suggests that although remittances can relax households' financing constraints, reducing their demand for bank loans, their positive effects are more prevalent: increased size of bank deposits allowing to serve new borrowers, increased financial literacy of remittance-receiving households, and improved banks' access to receiving households' income information. The results show that the positive effect of remittances is sizeable as an increase in remittance inflows by 1% of GDP can improve the number of household loan accounts by up to 70.87 per 1000 adults (model 1).

The other *de facto* financial integration measures, FDI inflows, turn out to have a negative association with the number of household loan accounts. It is consistently negative and statistically significant in all, but one (model 3), specifications. This could be caused by the MNEs' crowding out effect and labour market effect. The former is related to MNEs' tapping into the available pool of bank capital. The labour market effect occurs when MNEs create new jobs, providing households with steady income. As a result, households' financial constraints are relaxed, reducing their demand for bank loans. The labour market effect could also appear when MNEs reduce jobs in the newly acquired domestic firms as a result of restructuring. In this case, the affected households have less chances of obtaining bank loans. However, the magnitude of FDI inflows coefficients is low, especially compared to remittance inflows. A rise in FDI inflows by 1% of GDP causes a drop in the number of household loan accounts by up to 3.12 per 1000 adults (model 8). This number is over 20 times smaller than the remittances' results.

Similarly to non-financial sector FDI, both measures of foreign bank presence, foreign bank assets and number of foreign banks, are found to positively affect the number of household loan accounts. These results are opposite to those reported in the existing financial inclusion literature (i.e. Beck *et al.*, 2007, Sarma and Pais, 2011) and indicate that foreign banks are more likely to relax financing constraints of "informationally difficult" households than to adapt a cream-skimming practice, focusing on high net worth individuals. However, similarly to FDI inflows, the effect of foreign bank presence is

relatively small. An increase in foreign bank number by 1% of all banks leads to a rise in household loan account number by up to 4.42 per 1000 adults (model 7).

The remaining types of capital flows, portfolio investment and offshore loans, turn out to be consistently negative, but statistically insignificant. The only exception is model (7), which reports that the coefficient of portfolio investment is negative and statistically significant at 5%. Hence, we fail to find strong evidence of portfolio investment and offshore loans' effect on financial inclusion of households.

Regarding control variables, only three of them appear to be significant: executive constraints, NPL, and ATM penetration. The executive constraints have, unexpectedly, a negative sign in all specifications, which contradicts the view that better property rights institutions reduce the risk of financial repression and government's pressure on banks' capital allocation strategy, encouraging the latter to offer loans to new households. The counter-intuitive results could be caused by the fact that the risk of expropriation by the government can manifest in unexpected devaluation of currency and surge in inflation, causing an erosion of real value of debt in domestic currency. Hence, under weak property rights protection and with lack of trust, households might be reluctant to deposit their savings within the banking sector, and in the same time they might borrow in domestic currency and immediately convert loans into foreign currency to hedge against domestic currency devaluation and inflation. Consequently, better property rights institutions and improved trust in financial sector leads to an increase in savings within domestic banks and a reduction in loans⁶⁴.

The negative effect of improved property rights institutions can also potentially reflect the fact that unconstrained executive branch of government can still choose to adopt policies in favour of household financial inclusion. As explained by Glaeser et al. (2004) on an example of North and South Korea, both countries were dictatorship after the Korean war until 1980. However, thanks to the pro-capitalism and pro-property rights protection policies chosen by the South Korean dictators, this country grew rapidly since the war. Hence, constraints on executive measure used in this paper do not capture the choices made by executives.

Another possible explanation of the executive constraints' negative sign is that the quality of institutions might become important only when countries achieve a certain level of economic development. The theory developed by Keloe and Ruhl (2010) shows that developing countries, which are far behind the industrial leader (i. e. the United States),

⁶⁴ To check if this is the case, we have run similar regressions on number of household *deposit* accounts and have found some evidence of the positive effect of executive constraints (see Appendix O).

can have a fast growth, despite having insufficient financial system, lack of rule of law, and rigidities in the labour market. The shorter the distance of the economy from the frontier, the more important the improvement of institutions and reforming policies become. As most of our observations are for developing economies (i.e. 169 out of 247 observations in case of the largest sample – see Appendix N), which are potentially still far from the industrial leader in terms of economic development, the quality of institutions might not play an important role in these economies yet.

Table 18. Empirical results for number of household loan accounts.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KAOPEN	273.8*** (65.85)	206.5*** (62.07)	187.6*** (67.60)	251.8*** (81.86)	229.1** (109.7)	235.7*** (83.65)	203.6** (74.70)	211.1* (113.4)
FDI inflows	-2.579*** (0.916)	-2.128*** (0.678)	-1.011 (0.789)	-1.841** (0.776)	-2.224*** (0.745)	-2.638** (1.228)	-2.027** (0.799)	-3.122*** (0.943)
Foreign bank assets	3.137 (1.902)	3.164* (1.577)	2.108 (1.668)	2.562* (1.396)	3.804*** (1.173)			
Foreign bank number						2.383 (2.248)	4.420*** (1.487)	4.209** (1.938)
Remittance inflows	70.87*** (15.41)	45.79*** (14.45)	43.50*** (13.44)	42.19*** (14.57)	42.48*** (11.09)	60.80*** (15.97)	30.86*** (10.33)	40.06*** (9.487)
Portfolio invest. (net flows)	-0.959 (0.960)	-0.620 (0.918)	-1.177 (0.833)	-1.527 (0.937)	-0.680 (1.143)	-1.397 (1.107)	-2.119** (0.952)	-0.220 (1.313)
Offshore loans (amount out.)	-1.902 (1.824)	-1.174 (1.082)	-0.524 (0.979)	-0.894 (1.054)	-1.574 (1.034)	-0.723 (1.629)	-0.791 (0.865)	-0.903 (1.120)
GDP per capita (log)	156.4 (654.0)	167.3 (255.3)	59.11 (200.0)	-100.2 (267.8)	93.24 (206.7)	303.1 (671.7)	-26.37 (242.8)	55.74 (289.0)
Primary school enrolment	-5.178 (9.391)					-5.211 (8.678)		
Executive constraints	-87.29*** (21.49)	-37.24*** (10.41)	-40.62*** (11.50)	-36.90** (15.28)	-41.03** (18.18)	-78.64*** (23.89)	-42.88*** (13.25)	-57.65*** (20.21)
ATM penetration	1.684 (2.684)	1.355 (1.946)	2.516** (1.167)	2.345** (0.970)		1.204 (2.587)	2.097* (1.126)	
Branch penetration	0.250 (0.774)	0.184 (0.647)				-0.187 (0.708)		
NPL	-7.465 (6.451)	-2.969 (3.484)	-1.886 (3.030)	-8.344** (3.960)	-5.981 (3.993)	-6.296 (5.094)	-6.732** (2.813)	-9.031** (4.359)
Bank concentration	-0.597 (3.202)	-1.828 (1.918)	-1.208 (2.082)			-0.825 (3.063)		
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	194	225	225	225	234	204	238	247
No. of countries	29	33	33	33	33	29	33	33
R2	0.1673	0.0938	0.0848	0.1240	0.1486	0.1749	0.1504	0.1777
Kleibergen-Paap underidentification	0.1169	0.0757	0.1440	0.3084	0.5176	0.0944	0.1374	0.3397
Hansen overidentification	0.8897	0.1277	0.0786	0.1020	0.1622	0.8680	0.4876	0.1942

Note: Standard errors are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%. Countries with just one observation have been removed: Bangladesh, Uganda, Netherlands (in models 1 and 6 only).

Other variable appearing to affect household loans account possession is NPL, which is statistically significant in three specifications (model 4, 7, and 8). As expected, higher

NPL (and hence, the worse the health of the banking sector) reduces the number of household loan accounts. This probably reflects the banking sector's unwillingness to take higher risk, by issuing loans to new and/or opaque households, when banks have a substantial level of "bad" loans in their balance sheets.

Finally, ATM penetration is consistently found to be positive, but statistically significant in only three specifications (model 3, 4, and 7), while branch penetration does not seem to affect the number of household loan accounts. The lack of significance of the proximity of banking services offered in bank branches can be potentially explained by the higher importance of telephone, online, and mobile banking, which replace a need of physical presence of banks' branches.

We also run two diagnostics tests, Kleibergen-Paap underidentification test and Hansen overidentification test, to check that the appropriate number of instruments were used in each specification. Their results are shown in Table 18 and indicate that there are no major issues with instruments used. The R^2 of roughly 0.15 is relatively high considering the difficulty in determining suitable determinants, or their proxies, of financial inclusion.

As can be seen in Table 18, the number of observations differs across specifications, ranging from 194 (model 1) to 247 (model 8). The sample compositions are presented in Appendix N and show a good mix of developed and developing countries. However, to ensure that the results are not affected by different sample compositions, we run the regressions again for the same sample (194 observations) as part of robustness checks. The newly obtained results, reported in Appendix P, are similar to those reported in Table 18. The main difference is a loss of significance of ATM penetration, which emphasizes the diminishing importance of the proximity to banking services due to improvement of communication technology. Hence, it can be concluded that our results are not sensitive to changes in sample compositions.

As the summary statistics of the number of household loan accounts in Table 16 revealed that there might be a problem with outliers, we also check if they could potentially affect the results reported above. First, the severe outliers, which are outside the outer fence (defined by inter-quartile range multiplied by three), are determined. After eliminating them from the sample, the regressions are run again. The obtained results are, again, consistent with those reported above (see Appendix Q).

Overall, there is strong evidence that different types of financial integration affect financial inclusion of households. While relaxing capital controls and increased remittance inflows are found to improve financial inclusion, the opposite is reported for FDI inflows, both to the financial and non-financial sectors. Considering the results of all

the measures together, it can be concluded that the net effect of financial integration is positive thanks to a much higher magnitude of KAOPEN and remittance inflows' coefficients compared to those of FDI inflows and foreign bank presence proxies.

4.5.2. SME loans

The results obtained for the number of SME loan account are reported in Table 19. As can be seen, the number of observations is modest, ranging from 130 (model 11) to 167 (models 10). Hence, the limited number of observations and different sample compositions (see Appendix R) compared to household loan accounts reported in the previous section do not allow for the direct comparison of the results.

Table 19. Empirical results for number of SME loan accounts.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
KAOPEN	23.18 (21.67)	-3.308 (14.38)	-3.396 (11.26)		16.54 (19.28)	23.04** (10.40)	25.89*** (8.911)	13.95* (7.601)	7.470* (3.901)	16.08* (8.021)
FDI inflows	-0.0166 (0.167)	-0.212* (0.104)	-0.214** (0.0972)	-0.190** (0.0876)	-0.0314 (0.100)	-0.118* (0.0669)	-0.110 (0.0724)	-0.155* (0.0835)	-0.165** (0.0622)	-0.0581 (0.0674)
Foreign bank assets	0.420* (0.243)	0.0224 (0.177)	-0.0206 (0.163)	0.0364 (0.112)						
Foreign bank number					-0.203 (0.165)	0.102 (0.143)	0.138 (0.144)			
Portfolio invest. (net flows)	-0.192 (0.268)	-0.0806 (0.221)	-0.0591 (0.199)	-0.178 (0.171)	0.0124 (0.183)					
Offshore loans (amount out.)	-0.440** (0.206)	-0.197 (0.251)	-0.203 (0.229)	-0.216 (0.191)	0.246 (0.241)	-0.0953 (0.186)				
Remittance inflows	3.465 (4.376)	0.635 (2.692)	1.222 (1.344)	0.250 (0.652)	1.941 (1.741)	-0.539 (1.233)	-0.717 (1.218)	-0.0315 (0.822)	0.612 (0.365)	0.0728 (0.447)
GDP per capita (log)	54.19** (21.03)	44.88*** (14.41)	37.69*** (11.45)	35.81*** (10.74)	31.77*** (10.50)	21.79** (9.048)	18.14** (8.229)	16.00** (7.110)	14.72** (5.573)	16.65** (6.757)
Executive constraints	-1.704 (3.512)	2.000 (2.392)			1.146 (2.229)	1.904* (1.044)	1.580 (0.946)	0.475 (1.031)		
ATM penetration	-0.105 (0.161)									
Branch penetration	0.135** (0.0502)	0.154*** (0.0403)	0.170*** (0.0254)	0.155*** (0.0183)	0.175*** (0.0394)	0.135*** (0.0290)	0.133*** (0.0302)	0.162*** (0.0255)	0.177*** (0.0192)	0.158*** (0.0170)
NPL										0.0982 (0.214)
Bank concentration	-0.320** (0.151)	-0.0662 (0.123)	-0.115 (0.0772)	-0.0923 (0.0743)	-0.173 (0.101)	-0.124 (0.0894)	-0.156* (0.0828)	-0.131* (0.0681)	-0.197*** (0.0542)	-0.143* (0.0798)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	137	141	148	148	151	153	153	160	167	130
No. of countries	24	24	25	25	24	24	24	26	27	22
R2	0.1330	0.1066	0.1062	0.1076	0.0669	0.0668	0.0665	0.0636	0.0875	0.1305
Kleibergen-Paap underidentification	0.0752	0.1244	0.2803	0.1940	0.1448	0.3461	0.3348	0.2228	0.4691	0.2017
Hansen overidentification	0.0992	0.2040	0.3446	0.4569	0.4318	0.0955	0.0819	0.3779	0.7254	0.1508

Note: Standard errors are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%.

It turns out that both *de jure* and *de facto* financial integration affects the financial inclusion of SMEs. However, KAOPEN is only weakly statistically significant at 10% in most specifications (models 9 – 10). Among capital flows, FDI inflows, which is a proxy

for MNEs presence, is found to have a negative sign in most specifications. This supports our view that MNEs can crowd domestic SMEs out from the available pool of formal capital. However, the effect is quite modest as an increase in FDI inflows by 1% of GDP causes a reduction of up to 0.21% of SMEs' share in all non-financial firms' loan accounts (model 3).

The remaining types of capital flows do not seem to affect the number of SMEs' loan accounts. The evidence of foreign bank's positive effect on SMEs' number of loan accounts is rather weak with foreign bank assets being significant at 10% in only one specification (model 1). Similarly, offshore bank loans are negative and statistically significant in model 1 only, while remittance inflows and portfolio net investment net flows do not appear significant in any specification. Hence, we cannot draw strong conclusion regarding these types of flows on SMEs borrowing.

Due to a limited number of observations, we have decided to only include controls that have a sufficient data coverage. As a result, we have excluded the primary school enrolment rate from all models as it caused a substantial drop in the number of observations. For the same reason, NPL, which has a potentially important impact on financial inclusion of SMEs, is present in model 10 only. However, it does not appear to be statistically significant. Among the remaining controls, natural log of GDP per capita is significant and positive in all specifications, which is in line with our expectations. The equally strong evidence of positive association is obtained for the branch penetration. Hence, it seems that, unlike households, SMEs still rely on the bank branches as their demand for credit is affected by the proximity and availability of the latter. The lower competition in the banking sector and the resulted higher costs of financial services, as proxied by bank concentration, is found to decrease the number of SMEs' loan accounts. Hence, the costs of formal financing play an important role in SMEs' decision to obtain bank loans. There is also a very weak proof of a positive effect of executive constraints, which is significant in only one specification (model 4).

The diagnostics tests presented in Table 19 indicate that there is no issue with under- or overidentification of instruments included in the models. The R^2 is relatively low, reaching the maximum of only 0.13 in model 1, which could suggest that the number of SMEs loan accounts are driven by different factors than household accounts. Hence, a different set of controls could be more appropriate.

As a robustness check, we run the regressions again, restricting to the same sample as in model 1 in Table 19. We exclude the specification with NPL (model 10) in this exercise. This is caused by the fact that limiting the analysis to the sample of 130 observations, a consequence of the poor country-year coverage of NPL, causes a problem of

instruments overidentification. The new results, for a sample of 137 observations (as in model 1 in Table 19), are presented in Appendix S. They are roughly the same as the ones reported earlier, with the largest difference being observed for KAOPEN, as it has lost its statistical significance. Remittance inflows, on the other hand, appears to be positive and significant in one specification (model 5), indicating that, despite the belief that remittances can relax SME's financial constraints, reducing the demand for formal capital, this type of firms could still potentially benefit from banks' redistribution of increased deposits from remittances. Offshore bank lending now appears to be negative and significant in three specifications, although the significance level of only 10% is reported in two of them (model 2 and 3). Hence, apart from FDI inflows into non-financial sector, there is no strong evidence that different types of financial integration affect SMEs bank borrowing.

To summarize, it is most likely that the net effect of financial integration on financial inclusion of SMEs is negative as there is strong evidence that MNEs presence reduces the number of SMEs' loan accounts. Other types of financial integration, *de jure* FI and remittance inflows, does appear to positively affect SMEs' borrowing, but the evidence is rather weak and seems to depend on the sample composition.

4.6. Conclusions

This chapter empirically investigated the potential impact of financial integration on the financial inclusion of two of the most vulnerable formal banking sector's user groups: households and SMEs. The focus has been on a specific channel of influence between the two phenomena: availability of capital. Hence, financial inclusion has been proxied by the number of loan accounts to explore if the increased availability of formal capital associated with financial integration could benefit households and SMEs. We analyse different types of financial integration to account for the multidimensional nature of this phenomenon, as well as their potentially opposite effects on financial inclusion.

Our results suggest that financial integration affects both households and SMEs' possession of loan accounts. While *de jure* financial integration seems to only benefit households, one *de facto* measure (i.e. FDI into non-financial sector) is reported to have similar effects on both types of the banking sector users. In essence, MNEs presence lead to a financial exclusion of households and SMEs. The opposite is apparent for remittance inflows as they are consistently found to increase the number of household loan accounts. The results allow us to conclude that the net effect of financial integration is likely to be positive for households. However, such strong statement cannot be made in case of SMEs are only a negative effect of FDI inflows is repeatedly reported for this financial sector user group.

We are aware that our paper is not free from limitations which could be addressed by further studies. First, the supply-side data used in the analysis does not allow to capture households and SMEs characteristics, which have been found to be important drivers of financial inclusion in the literature. Although we have applied GMM estimator to address the issue of heteroskedasticity caused by omitted variables, we believe that it would be beneficial to conduct further investigation using demand-side data as they become more available. Second, the separation of households from SMEs loan accounts revealed that these two groups of users are likely to be affected by different set of determinants. Hence, they should not only be studied separately, but also the appropriate determinants for each group should be identified.

Despite its shortcomings, we believe that our paper makes an important contribution to the limited body of financial inclusion literature. It also has significant implication for policy-makers: the net effect of financial integration is, on average, positive for households. Hence, policy-makers should encourage financial integration, especially in the form of remittance inflows as they are proved to have a profound effect on households. Foreign banks also seem to improve households' access to formal capital in the form of bank loans. Furthermore, relaxing capital account restrictions alone already benefit households substantially.

References

- Acemoglu, D. and Johnson, S. (2005) Unbundling institutions. *Journal of Political Economy*, vol. 113, pp. 949-995.
- Aggarwal, R., Demirgüç-Kunt, A. and Pería, M. S. M. (2011) 'Do remittances promote financial development?', *Journal of Development Economics*. Elsevier B.V., 96, pp. 255–264. doi: 10.1016/j.jdeveco.2010.10.005.
- Allen, F. *et al.* (2016) 'The foundations of financial inclusion: Understanding ownership and use of formal accounts', *Journal of Financial Intermediation*. Elsevier Inc., 27, pp. 1–30. doi: 10.1016/j.jfi.2015.12.003.
- Anzoategui, D., Demirgüç-Kunt, A. and Martínez Pería, M. S. (2014) 'Remittances and Financial Inclusion: Evidence from El Salvador', *World Development*, 54, pp. 338–349. doi: 10.1016/j.worlddev.2013.10.006.
- Aportela, F. (1999) 'Effects of Financial Access on Savings by Low-Income People'. [Online] Available from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.194.5270&rep=rep1&type=pdf> [Accessed 17th May 2018] doi: 10.1.1.194.5270.
- Ardic, O. P., Heimann, M. and Mylenko, N. (2011) 'Access to Financial Services and the Financial Inclusion Agenda around the World A Cross-Country Analysis with a New Data Set', *World Bank Policy Research Working Paper*, 5537.
- Ayana Aga, G. and Martínez Pería, M. S. (2014) 'International Remittances and Financial Inclusion in Sub-Saharan Africa', *World Bank Policy Research Working Paper*, 6991.
- Beck, T., Demirgüç-Kunt, A. and Martínez Pería, M. S. (2007) 'Reaching out: Access to and use of banking services across countries', *Journal of Financial Economics*, 85, pp. 234–266. doi: 10.1016/j.jfineco.2006.07.002.
- Brown, R. P. C., Carmignani, F. and Fayad, G. (2013) 'Migrants' remittances and financial development: Macro- and micro-level evidence of a perverse relationship', *World Economy*, 36(5), pp. 636–660. doi: 10.1111/twec.12016.
- Bruhn, M. and Love, I. (2014) 'American Finance Association The Real Impact of Improved Access to Finance : Evidence from Mexico', *The Journal of Finance*, 69(3), pp. 1347–1376.
- Cameron, A. C. and Trivedi, P. K. (2010) *Microeconometrics using Stata*. A Stata Press Publication, Texas.
- Chinn, M. D. and Ito, H. (2006) 'What matters for financial development? Capital controls, institutions, and interactions', *Journal of Development Economics*, 81(1), pp. 163–192. doi: 10.1016/j.jdeveco.2005.05.010.
- Clarke, G. R. G., Cull, R. and Martínez Pería, M. S. (2006) 'Foreign bank participation and access to credit across firms in developing countries', *Journal of Comparative Economics*, 34(4), pp. 774–795. doi: 10.1016/j.jce.2006.08.001.
- Dabla-Norris, E. *et al.* (2015) 'Financial Inclusion: Zooming in on Latin America', *IMF Working Papers*, WP/15/206.
- Dell'Ariccia, G. and Marquez, R. (2004) 'Information and bank credit allocation', *Journal of Financial Economics*, 72(1), pp. 185–214. doi: 10.1016/S0304-405X(03)00210-1.

- Demirguc-Kunt A. and Klapper, L. (2012) Measuring Financial Inclusion. The Global Findex Database. *World Bank Policy Research Working Paper*, no. 6025.
- Demirguc-kunt, Asli.; Klapper, Leora.; Singer, D. (2017) 'Financial inclusion and inclusive growth A review of recent empirical evidence', *World Bank Policy Research Working Paper*, 8040.
- Demirgüç-Kunt, A. *et al.* (2011) 'Remittances and banking sector breadth and depth: Evidence from Mexico', *Journal of Development Economics*. Elsevier B.V., 95, pp. 229–241. doi: 10.1016/j.jdeveco.2010.04.002.
- Demirgüç-Kunt, A. and Klapper, L. (2012) 'Measuring Financial Inclusion: The Global Findex Database', *World Bank Policy Research Working Paper*, 6025. doi: 10.1596/978-0-8213-9509-7.
- Dupas, P. and Robinson, J. (2013) 'Saving constraints and microenterprise development: evidence from a field experiment in Kenya', *American Economic Journal: Applied Economics*, 5(1), pp. 163–192. doi: 10.3386/w14693.
- Fernández, A. *et al.* (2015) 'Capital Control Measures: A New Dataset', *IMF Working Paper no. WP/15/80*. Available at: <http://www.columbia.edu/~mu2166/fkrsu/fkrsu.pdf>.
- Glaeser, E. L., La Porta, R., Lopez-De-Silanes, F., Shleifer, A. (2004) Do institutions cause growth? *Journal of Economic Growth*, vol. 9, pp. 271-303.
- GPFI (2018) About GPFI [Online] Available from: <http://www.gpfi.org/about-gpfi> [Accessed 20th Aug 2018].
- Kahle, K. M. and Stulz, R. M. (2013) 'Access to capital, investment, and the financial crisis', *Journal of Financial Economics*. Elsevier, 110(2), pp. 280–299. doi: 10.1016/j.jfineco.2013.02.014.
- Karlan, D., Ratan, A. L. and Zinman, J. (2014) 'Savings by and for the Poor: A research review and agenda', *Review of Income and Wealth*, 60(1), pp. 36–78. doi: 10.1111/roiw.12101.
- Karlan, D. and Zinman, J. (2010) 'Expanding credit access: Using randomized supply decisions to estimate the impacts', *Review of Financial Studies*, 23(1), pp. 433–464. doi: 10.1093/rfs/hhp092.
- de la Torre, A., Martínez Pería, M. S. and Schmukler, S. L. (2010) 'Bank involvement with SMEs: Beyond relationship lending', *Journal of Banking and Finance*. Elsevier B.V., 34(9), pp. 2280–2293. doi: 10.1016/j.jbankfin.2010.02.014.
- Mian, A. (2006) 'Distance constraints: The limits of foreign lending in poor economies', *Journal of Finance*, 61(3), pp. 1465–1505. doi: 10.1111/j.1540-6261.2006.00878.
- Nigh, D., Cho, K. R. and Krishnan, S. (1986) The Role of Location-Related Factors in US Banking Involvement Abroad: An Empirical Examination. *Journal of International Business Studies*, 17(3), pp. 59-72.
- Petrou, A. (2007) Multinational banks from developing versus developed countries: Competing in the same arena? *Journal of International Management*, 13 (3), pp. 376-397.
- Sahay, R. *et al.* (2015) Financial Inclusion: Can It Meet Multiple Macroeconomic Goals? *IMF Staff Discussion Note*, SDN/15/17.
- Sarma, M. and Pais, J. (2011) 'Financial inclusion and development', *Journal of*

International Development, 23, pp. 613–628. doi: 10.1002/jid.

Swamy, V. (2014) 'Financial Inclusion, Gender Dimension, and Economic Impact on Poor Households', *World Development*. Elsevier Ltd, 56, pp. 1–15. doi: 10.1016/j.worlddev.2013.10.019.

UN (2018) Sustainable Development Goals: Promote inclusive and sustainable economic growth, employment and decent work for all [Online] Available from: <https://www.un.org/sustainabledevelopment/economic-growth/> [Accessed 20th Aug 2018].

Williams, D. (2003) 'Explaining employment changes in foreign manufacturing investment in the UK', *International Business Review*, 12(4), pp. 479–497. doi: 10.1016/S0969-5931(03)00040-4.

Yamori, N. (1998) A note on the location choice of multinational banks: The case of Japanese financial institutions. *Journal of Banking & Finance*, 22(1), pp. 109-120.

Appendices

Appendix N. Sample composition. Dependent variable: number of household loan accounts.

	model (1)	model (2)-(4)	model (5)	model (6)	model (7)	model (8)
Argentina	10	10	10	10	10	10
Armenia		5	5		5	5
Belgium	7	7	7	7	7	7
Brazil	6	7	7	6	7	7
Bulgaria	9	9	9	9	9	9
Chile	6	6	6	7	10	10
China		2	2		2	2
Colombia	7	7	10	7	7	10
Dominican Rep.	8	8	8	8	8	8
Estonia	9	9	9	9	9	9
Georgia	8	9	9	8	9	9
Greece	7	9	10	7	9	10
Hungary	6	6	6	6	6	6
India	7	9	10	7	9	10
Indonesia	10	10	10	10	10	10
Italy	5	5	5	5	5	5
Japan	3	3	3	10	10	10
Jordan		7	10		7	10
Kuwait	2	2	2	2	2	2
Macedonia	5	6	6	5	6	6
Malaysia	10	10	10	10	10	10
Mexico	10	10	10	10	10	10
Moldova	3	3	3	3	3	3
Namibia	7	8	9	7	8	9
Netherlands		2	2		2	2
Pakistan	10	10	10	10	10	10
Peru	9	9	9	9	9	9
Poland	5	5	5	5	5	5
Portugal	3	3	3	3	3	3
Romania	5	6	6	5	6	6
Saudi Arabia	5	5	5	5	5	5
Spain	8	8	8	10	10	10
Thailand	4	10	10	4	10	10
Total	194	225	234	204	238	247

Appendix O. Empirical results for number of household deposit accounts.

	(1)	(2)	(3)
KAOPEN	264.0*	131.2	67.53
	(137.0)	(146.1)	(179.0)
FDI inflows	2.636	2.261	3.254
	(2.998)	(4.179)	(4.593)
Foreign bank assets	-0.768		
	(1.459)		
Foreign bank number		-5.505	-9.565
		(4.468)	(6.012)
Portfolio investment (net flows)		-3.048	-2.769
		(4.175)	(4.291)
Offshore loans (amount out.)		-2.031	3.020
		(7.059)	(6.183)
Remittance inflows	66.49*	85.26**	68.72*
	(32.93)	(30.80)	(38.12)
GDP per capita (log)	269.0	846.2	679.8
	(369.4)	(752.7)	(692.0)
Executive constraints	2.485	14.18**	1.631
	(6.198)	(5.720)	(9.587)
ATM penetration	4.747*		7.242**
	(2.735)		(2.859)
Branch penetration	1.842		3.396
	(1.917)		(3.193)
NPL	22.82*	14.21	21.33
	(11.73)	(11.80)	(12.78)
Year dummies			
No. of observations	186	208	203
No. of countries	28	28	28
R2	0.2265	0.3756	0.3761
Kleibergen-Paap underidentification	0.5794	0.8481	0.6849
Hansen overidentification	0.2509	0.2947	0.2928

Appendix P. Empirical results for the same sample. Dependent variable: number of household loan accounts.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KAOPEN	273.8*** (65.85)	269.5*** (81.02)	245.6** (114.4)	250.6*** (89.78)	203.1** (79.15)	280.5*** (67.93)	248.3*** (86.04)	266.3*** (70.33)
FDI inflows	-2.579*** (0.916)	-2.481** (0.908)	-2.532** (1.173)	-2.370*** (0.720)	-2.859*** (0.698)	-2.834** (1.084)	-2.782*** (0.934)	-2.791*** (0.683)
Foreign bank assets	3.137 (1.902)	2.947 (2.277)	4.021* (2.185)	4.467** (1.680)	5.148*** (1.632)			
Foreign bank number						2.063 (2.862)	5.529** (2.193)	8.679*** (2.876)
Portfolio invest. (net flows)	-0.959 (0.960)	-0.625 (0.891)	-0.197 (0.856)	-0.300 (0.764)	0.479 (0.853)	-0.936 (0.993)	0.127 (0.818)	-0.495 (1.269)
Offshore loans (amount out.)	-1.902 (1.824)	-2.115 (1.537)	-1.820 (1.523)	-1.550 (1.508)	-2.788 (1.692)	-1.446 (1.652)	-1.590 (1.262)	-2.848** (1.348)
Remittance inflows	70.87*** (15.41)	66.96*** (13.50)	65.23*** (12.75)	60.14*** (12.80)	68.46*** (10.92)	67.28*** (18.92)	45.89** (16.96)	44.83** (17.61)
GDP per capita (log)	156.4 (654.0)	118.4 (421.9)	-253.7 (349.0)	-276.3 (347.3)	41.92 (230.3)	144.3 (675.9)	-123.8 (249.5)	-326.2 (256.3)
Primary school enrolment	-5.178 (9.391)					-5.746 (9.411)		
Executive constraints	-87.29*** (21.49)	-90.63*** (23.42)	-104.5*** (28.33)	-97.31** (39.93)	-103.0* (56.84)	-78.31*** (21.33)	-92.66** (35.65)	-99.30** (48.32)
ATM penetration	1.684 (2.684)	1.534 (2.381)	2.111 (2.279)	2.244 (1.335)		1.358 (2.724)	0.711 (1.272)	
Branch penetration	0.250 (0.774)	0.389 (0.654)				0.0787 (0.821)		
NPL	-7.465 (6.451)	-7.149 (5.946)	-12.39** (5.516)	-12.69** (5.240)	-10.02* (5.178)	-9.284 (5.983)	-11.01*** (3.367)	-14.51*** (5.116)
Bank concentration	-0.597 (3.202)	-1.476 (2.545)	-0.146 (2.887)			-0.144 (3.300)		
Year dummies	Yes							
No. of observations	194	194	194	194	194	194	194	194
No. of countries	29	29	29	29	29	29	29	29
R2	0.1673	0.1381	0.1605	0.1476	0.1554	0.1906	0.1887	0.1676
Kleibergen-Paap underidentification	0.1169	0.1248	0.1643	0.3776	0.5431	0.1175	0.0911	0.8816
Hansen overidentification	0.8897	0.9333	0.7679	0.4835	0.5854	0.8732	0.3779	0.6423

Note: Standard errors are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%.

Appendix Q. Empirical results without outliers. Dependent variable: number of household loan accounts.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KAOPEN	266.1*** (81.63)	239.6*** (66.85)	207.1** (89.48)	315.8*** (79.68)	292.9*** (103.3)	219.2** (106.5)	251.2*** (76.39)	245.9** (113.8)
FDI inflows	-2.640*** (0.950)	-2.305*** (0.729)	-1.893** (0.857)	-2.282*** (0.719)	-2.499*** (0.807)	-2.622* (1.298)	-2.190** (0.897)	-2.910*** (1.045)
Foreign bank assets	2.675 (2.016)	3.350** (1.437)	3.451** (1.440)	2.882** (1.270)	3.675*** (1.025)			
Foreign bank number						2.030 (3.025)	5.687*** (1.771)	4.608** (1.786)
Portfolio invest. (net flows)	-0.901 (0.899)	-0.317 (0.716)	-0.347 (0.753)	-0.992 (0.872)	-0.0708 (0.861)	-1.280 (0.986)	-1.630** (0.788)	-0.378 (1.084)
Offshore loans (amount out.)	-1.769 (1.550)	-1.504 (1.009)	-1.471 (1.044)	-1.838* (1.085)	-1.893* (0.940)	-0.518 (1.375)	-1.305 (0.873)	-1.229 (1.001)
Remittance inflows	68.91*** (11.14)	51.31*** (12.47)	43.53*** (13.68)	56.52*** (12.61)	49.20*** (10.92)	59.35*** (15.10)	34.01*** (10.70)	40.69*** (10.75)
GDP per capita (log)	230.4 (524.3)	140.2 (231.4)	248.3 (254.9)	-211.6 (262.3)	121.0 (180.0)	421.5 (555.3)	-157.7 (221.3)	31.23 (269.4)
Primary school enrolment	-4.490 (4.466)					-4.589 (4.735)		
Executive constraints	-83.87*** (21.69)	-48.43*** (9.962)	-58.72*** (18.76)	-56.54*** (12.52)	-73.03*** (11.61)	-76.91*** (24.81)	-61.63*** (10.47)	-77.52*** (16.77)
ATM penetration	1.076 (2.015)	0.695 (1.540)	-0.0733 (1.475)	1.940** (0.755)		0.479 (2.113)	2.048** (0.918)	
Branch penetration	0.216 (0.484)	-0.204 (0.451)				-0.226 (0.558)		
NPL	-7.429 (5.091)	-7.550*** (2.307)	-5.400* (2.826)	-11.02*** (3.581)	-7.562** (3.453)	-5.936 (4.075)	-8.561*** (2.230)	-8.444** (3.954)
Bank concentration	0.213 (2.288)	0.553 (1.184)	0.442 (1.405)			0.198 (2.274)		
Year dummies	Yes							
No. of observations	193	224	224	224	233	203	237	246
No. of countries	29	33	33	33	33	29	33	33
R2	0.2410	0.1941	0.2103	0.1696	0.1809	0.2309	0.2011	0.2114
Kleibergen-Paap underidentification	0.1149	0.0889	0.1395	0.2943	0.4980	0.0930	0.1393	0.3305
Hansen overidentification	0.9251	0.1575	0.0777	0.1108	0.1306	0.8958	0.5577	0.2986

Note: Standard errors are in parentheses. Asterisks show level of significance of the parameter estimates at: *10%, **5%, ***1%.

Appendix R. Sample composition. Dependent variable: number of SME loan accounts.

	model (1)	model (2)	model (3) – (4)	model (5)	Model (6) – (7)	model (8)	model (9)	model (10)
Argentina	2	2	2	2	2	2	2	2
Bangladesh	10	10	10	10	10	10	10	3
Belgium	7	7	7	7	7	7	7	7
Bosnia and Herzegovina			7				7	7
Burundi	2	2	2	2	2	2	2	2
Cameroon	9	9	9	10	10	10	10	3
Chile	6	6	6	6	6	6	6	6
Colombia	7	9	9	9	9	9	9	9
Dominican Rep.	8	8	8	8	8	8	8	8
Gabon						3	3	3
Georgia	10	10	10	10	10	10	10	10
Hungary	6	6	6	6	6	6	6	6
India	9	10	10	10	10	10	10	10
Italy	5	5	5	5	5	5	5	5
Japan	3	3	3	10	10	10	10	10
Libya	5	5	5	6	6	6	6	
Macedonia	6	6	6	6	6	6	6	6
Madagascar	3	3	3	3	5	5	5	
Malawi	2	2	2	2	2	2	2	
Malaysia	7	7	7	7	7	7	7	7
Myanmar						4	4	
Namibia	8	9	9	9	9	9	9	9
Nicaragua	5	5	5	6	6	6	6	
Peru	4	4	4	4	4	4	4	4
Poland	2	2	2	2	2	2	2	2
Portugal	5	5	5	5	5	5	5	5
Romania	6	6	6	6	6	6	6	6
Total	137	141	148	151	153	160	167	130

Appendix S. Empirical results for the same sample. Dependent variable: number of SME loan accounts.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
KAOPEN	23.18 (21.67)	-10.98 (15.45)	-0.205 (16.12)		33.45 (22.93)	8.921 (13.68)	1.294 (15.47)	6.180 (10.61)	7.714 (8.540)
FDI inflows	-0.0166 (0.167)	-0.255* (0.132)	-0.266** (0.114)	-0.183* (0.100)	0.0331 (0.135)	-0.190** (0.0808)	-0.140* (0.0811)	-0.208** (0.0927)	-0.173* (0.0860)
Foreign bank assets	0.420* (0.243)	0.0782 (0.149)	0.140 (0.159)	0.218 (0.132)					
Foreign bank number					0.105 (0.131)	0.0789 (0.138)	0.0347 (0.136)		
Portfolio invest. (net flows)	-0.192 (0.268)	0.140 (0.204)	-0.118 (0.201)	-0.0788 (0.152)	-0.0830 (0.179)				
Offshore loans (amount out.)	-0.440** (0.206)	-0.291* (0.169)	-0.335* (0.187)	-0.305 (0.195)	-0.130 (0.168)	-0.248 (0.168)			
Remittance inflows	3.465 (4.376)	1.962 (4.232)	-1.381 (3.269)	-1.067 (1.823)	5.461** (2.416)	1.040 (1.898)	2.259 (1.917)	0.578 (1.526)	0.0654 (1.648)
GDP per capita (log)	54.19** (21.03)	56.58*** (19.20)	56.08*** (15.40)	56.50*** (12.33)	40.74*** (10.97)	39.50*** (5.925)	40.58*** (10.18)	32.42*** (9.403)	39.61*** (9.709)
Executive constraints	-1.704 (3.512)	2.136 (2.956)			-1.477 (2.636)	4.925*** (1.553)	3.793** (1.757)	2.866* (1.502)	
ATM penetration	-0.105 (0.161)								
Branch penetration	0.135** (0.0502)	0.121*** (0.0428)	0.104*** (0.0367)	0.104*** (0.0334)	0.132*** (0.0410)	0.132*** (0.0362)	0.128*** (0.0381)	0.141*** (0.0239)	0.124*** (0.0285)
Bank concentration	-0.320** (0.151)	-0.0493 (0.142)	-0.107 (0.0917)	-0.0978 (0.0837)	-0.343** (0.132)	-0.0991 (0.0996)	-0.115 (0.0985)	-0.0783 (0.0677)	-0.124* (0.0620)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	137	137	137	137	137	137	137	137	137
No. of countries	24	24	24	24	24	24	24	24	24
R2	0.1330	0.0987	0.0607	0.1208	0.0129	0.0583	0.0964	0.0747	0.1132
Kleibergen-Paap underidentification	0.0752	0.0705	0.4897	0.1210	0.1607	0.3086	0.2035	0.4656	0.6482
Hansen overidentification	0.0992	0.1134	0.1619	0.0917	0.2200	0.0151	0.0749	0.1826	0.2568

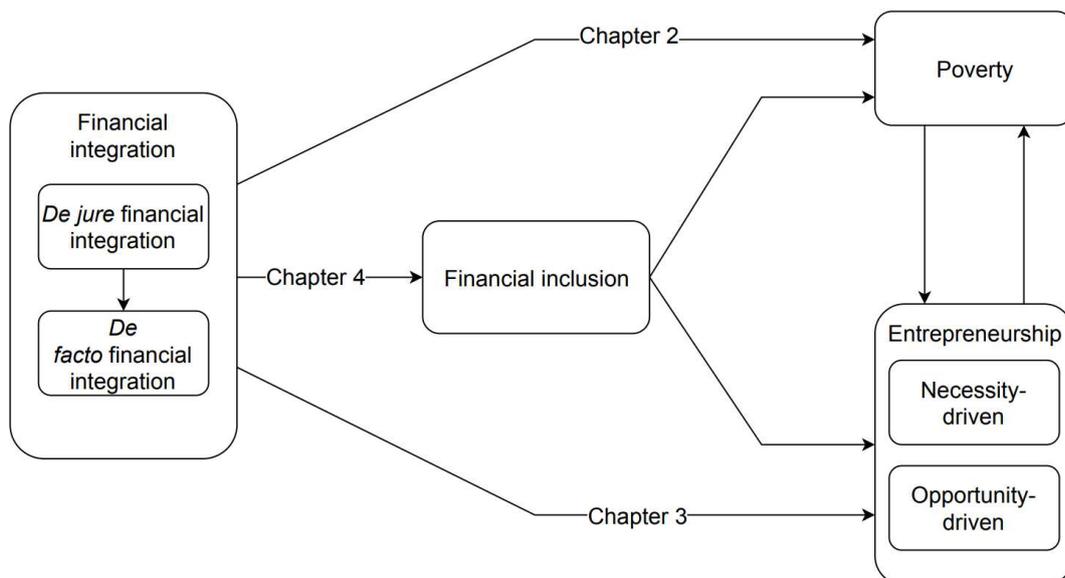
Chapter 5: Conclusion

The main objective of this thesis is to empirically determine the role of financial integration in alleviating poverty, promoting entrepreneurial activities and financial inclusiveness. Therefore, it contributes to the international finance, development economics, and business literature. This chapter presents the main findings and contributions of this thesis, as well as its limitations and recommendations for future studies.

5.1. Main findings and contributions

The theoretical framework described in Chapter 1 shows how all phenomena considered in this thesis interact with each other. Its simplified version is presented in Figure 23 and highlights the relationships investigated in each empirical chapter. All chapters stress the importance of considering different aspects of financial integration, providing strong evidence that lifting capital account restrictions and actual capital flows often have opposite effects on the economy. Furthermore, cross-border capital flows also need to be differentiated based on asset classes as, according to the composition hypothesis, the effect of financial integration relies heavily on the composition of capital flows (e.g. Prasad et al., 2003, Aisbett et al., 2006). This hypothesis is supported by the findings presented in the empirical chapters of this thesis.

Figure 23. Theoretical framework and problems investigated in particular chapters.



The first empirical study, presented in Chapter 2, investigates the impact of financial integration on absolute and relative poverty, measured by incidence and depth of poverty, as well as income share of the poorest. The obtained evidence indicates that

both incidence and depth of poverty are affected by financial integration. More importantly, the two main components of financial integration, *de jure* and *de facto*, appear to have opposite effects. The positive impact of *de jure* financial integration is attributed to its strong disciplining role in an economy that leads to improved local financial infrastructure and business environment. Meanwhile, the negative effect of *de facto* financial integration can be explained by low-skilled job destruction caused by Multinational Enterprises presence. The remaining types of asset classes (i.e. portfolio investments and loans from non-resident banks) do not appear to affect poverty.

Chapter 3 aims to theoretically and empirically explore the relationship between financial integration and entrepreneurship. One of the contributions of this chapter is to focus specifically on nascent entrepreneurs, who have high demand for, but also high difficulty in obtaining formal financing. Furthermore, the entrepreneurs' motivation is also considered by grouping them into necessity- and opportunity-driven groups. A theoretical framework is created, showing the possible direct and indirect channels of influence between different types of financial integration and two types of nascent entrepreneurs. The empirical evidence shows that while both types of nascent entrepreneurs seem to be hurt by cross-border bank lending inflows and trade credit outflows, the necessity-driven ones are additionally harmed by MNEs entry and portfolio investment inflows. Foreign bank presence and trade credit inflows, on the other hand, turn out to be beneficial for both types of nascent entrepreneurs. The role of *de jure* financial integration is less clear as the evidence of positive impact of the overall openness index is very weak. More importantly, trade openness consistently appears to have a positive moderation effect on the financial integration relationship with nascent entrepreneurs, supporting the private interest theory of financial development by Rajan & Zingales (2003).

The final empirical study (Chapter 4) contributes to a small emerging body of research on financial inclusion, viewing financial integration as a potential driver for this phenomenon. By analysing the financial inclusion of households and SMEs separately, this chapter accounts for the fact that there are potentially different effects of various types of financial integration on two of the most disadvantaged user groups of financial services. The obtained results indicate that relaxing controls on capital flows has significant positive effect on both households and SMEs, although the impact on the latter seem to be sensitive to a sample composition. This finding is similar to the one reported in Chapter 2 and suggests that financial inclusion could be an important link between financial integration and poverty. Among *de facto* measures, the positive effect on households is reported for foreign bank presence and remittance inflows. On the other hand, the FDI into non-financial sector, is again found to have a negative impact. Looking

at the magnitude of the coefficients, it can be concluded that the net effect of *de facto* financial integration is positive for households' financial inclusion. Such strong statement cannot be made for the SMEs due to the lack of strong evidence. From a methodological perspective, the chapter enriches the financial inclusion literature by conducting, for the first time, a cross-country panel data analysis, which allows to (1) better address endogeneity issue and (2) obtain more universal results.

Overall, *de jure* financial integration is repeatedly found to be beneficial across all empirical chapters. FDI into non-financial sector, on the other hand, consistently appears to have a negative impact. These contradictory findings support the emerging view in the literature that capital account liberalization has little effect on actual capital flows (e.g. Jinjark et al., 2013). The more recent research by Wang et al. (2017) reveals that such dissonance among *de jure* and *de facto* financial integration could be caused by underdevelopment of local financial market (see Chapter 2, Section 2.7 for more details).

5.2. Limitations

Some limitations of the empirical chapters of this thesis need to be acknowledged. The first shortcoming of Chapter 2 stems from the use of country-level data. As poverty is experienced at the individual/household level, it would be interesting to conduct complementary analyses using individual/household-level data. This would allow to include important determinants of poverty, such as individual/household characteristics, in the empirical model. Furthermore, the poverty measures used in Chapter 2 do not allow for strict cross-national comparability due to different method of data collection applied in the underlying household surveys. For example, some national surveys use income as a proxy for well-being, while others use consumption.

The main limitation of Chapter 3 pertains to the constraints of the GEM data. The GEM entrepreneurship measures have been criticised for providing an inaccurate picture of entrepreneurial activities (Parker, 2018). On the one hand, the GEM measures can overestimate entrepreneurial activities as they unnecessarily capture hobby businesses, which bring little private or social value. On the other hand, determining entrepreneurship based on businesses' age (i.e. no more than 3 months in operation in case of nascent entrepreneurship) could lead to underestimation. Additionally, there are no low-income countries in the sample used in Chapter 3. Hence, the results obtained in this chapter might not be applicable to the poorest economies.

Similarly to the previous empirical chapters, the data used in Chapter 4 also raises some concerns. The supply-side indicators provided by the FAS, which collects data from regulated financial institutions, can overestimate the number of formal financial products

and services users (Demirguc-Kunt and Klapper, 2012). This is caused by the fact that they also capture multiple and dormant accounts, which should be excluded from the computation. Furthermore, the country indicators cannot provide financial users' characteristics and hence, these important determinants of financial inclusion could not be included in the empirical model used in Chapter 4.

5.3. Policy implications

The first recommendation arising from this thesis is that policy-makers should strive to reduce controls on capital flows, despite the risk associated with greater exposure to international shocks. As shown in the Theoretical Framework in Chapter 1, *de jure* financial integration plays a crucial role in the economy thanks to its disciplining effect. While relaxing capital account restrictions does not necessarily lead to higher capital flows, it can encourage local banks to shift their lending portfolio towards opaque borrowers. Furthermore, it pushes government to lift formal business barriers (see Norback et al., 2013). The empirical chapters of this thesis indeed report *de jure* financial integration to have a positive effect on the poor (Chapter 2), nascent entrepreneurs (Chapter 3), and financial inclusion (Chapter 4), albeit the evidence found for entrepreneurship is relatively weak. In all cases, the results highlighted above have been identified even though the samples investigated include a major economic crisis.

Looking at *de facto* financial integration, the empirical results reported in this thesis clearly indicate that policy-makers should pay close attention to foreign direct investment into non-financial sector as it is consistently found to negatively affect poverty, necessity-driven entrepreneurship and financial inclusion of both households and SMEs. Although poverty-boosting effect of this type of capital flows is clearly undesirable, the reduction of necessity-driven entrepreneurship and financial inclusion is not necessarily a negative outcome. This is, MNEs can create new jobs, providing both poor and non-poor households with steady income, which in turn (1) eliminates their need to become entrepreneurs out of necessity and (2) decreases their demand for bank loans. However, if the reduced entrepreneurial activity and financial inclusion are a result of the crowding out effect (i.e. MNEs tapping into the pool of formal capital), then FDI into non-financial sector is hurtful for the economy. Therefore, policy-makers should encourage MNEs to create new jobs (e.g. by promoting greenfield investments instead of M&A) to offset the negative impact of foreign firms' entry.

It is recommended that policy-makers encourage FDI into the financial sector in the form of foreign bank entry. The empirical findings in this thesis indicate that this type of FDI has a positive effect on both types of nascent entrepreneurship and financial inclusion of households and SMEs. The similar recommendation arises for remittance inflows, which

are found to improve the financial inclusion of households, while having no effect on poverty and entrepreneurship. To increase remittances, policy-makers can, for example, introduce upper cap on remittance transaction fees charged by financial institutions.

Similarly, trade credit inflows, which are related to higher export, should be advocated as they are proved to benefit nascent entrepreneurs. On the contrary, trade credit outflows should be capped due to negative product market effect related to higher import, which hurt both types of nascent entrepreneurs.

Finally, policy-makers should ensure that financial integration is accompanied by trade openness. Chapter 3 provides evidence that both *de jure* and *de facto* financial integration have positive effect on nascent entrepreneurs when trade openness is present, supporting the private interest theory of financial development by Rajan and Zingales (2003).

5.4. Directions for further studies

The investigations conducted as part of this thesis have shown the importance of both *de jure* and *de facto* financial integration in determining poverty, entrepreneurship, and financial inclusion. This is an important contribution to the current literature, as we have been able to estimate consistently distinct effects for these two measures of financial integration in each of the three empirical chapters presented here, thus confirming that they each play a role on poverty alleviation, entrepreneurship and financial inclusion. Further disaggregating *de facto* financial integration also proved to be a very fruitful exercise. However, there is still a lot of scope for further studies and some of possible directions are listed below.

Although the theoretical framework developed in this thesis highlights financial inclusion as one of the links between financial integration and both poverty and entrepreneurship, this is not explored empirically in this thesis. Instead, Chapter 4 provides evidence that financial integration affects households' and SMEs' access to formal credit, one of the dimensions of financial inclusion. Hence, it would be interesting to analyse financial inclusion as a channel of influence, not as an end result of financial integration. Furthermore, the existing literature provides evidence of the beneficial impact of having deposit bank account on poverty (Bruhn and Love, 2014; Swamy, 2014) and entrepreneurship (Dupas and Robinson, 2013), but no such literature exists for access to credit. Therefore, one could also explore the effect of expanded access to credit on poverty and entrepreneurship. Similarly, the role of nascent entrepreneurship for poverty reduction could also be investigated recognising the potentially different roles played by opportunity and necessity driven entrepreneurship. Specifically, these two types of

entrepreneurship could be investigated as potential channels through which financial integration (among other things) can impact poverty rates and depth.

The existing literature suggests two hypotheses that can explain the contradicting effects of financial integration: composition hypothesis and threshold hypothesis (see Chapter 1, Section 1.10). All the empirical chapters of this thesis test the composition hypothesis, which states that the net effect of financial integration relies on the composition of flows. While Chapter 2 does not find enough support for this hypothesis, Chapter 3 and 4 proves that different types of flows indeed have different, often opposite, effects on nascent entrepreneurship and financial inclusion, respectively. The last two empirical chapters also contribute to the literature by providing detailed conceptual models of the composition hypothesis based on a thorough and comprehensive review of the literature. Chapter 3 in particular puts great emphasis on detailing direct and indirect channels of action across a large set of financial integration flows, which in itself is an important contribution to the literature. However, the threshold hypothesis is not explored in this thesis and hence, should be investigated in further studies to help determine the conditions required (e.g. adequate level of financial development and institutions, strong macroeconomic policies) to fully reap the benefits of financial integration.

All empirical chapters of this thesis only consider direct impacts of financial integration. As stated in the theoretical framework in Chapter 1, there are also indirect impacts of financial integration. Thus, further studies on financial integration and poverty/entrepreneurship/financial inclusion could consider exploring indirect relationship (e.g. through economic growth) to get a better understanding of the financial integration effects.

Lastly, as mentioned in Section 5.2, the main limitations of the empirical chapters in this thesis are related to the data used. Further studies in the related fields could benefit from using alternative data sources or from the development of new data sources and financial inclusion measurements. In particular, researches into poverty and financial inclusion could use individual- or household-level indicators, which would allow for other relevant determinants to be explicitly controlled for in the empirical models. It would also be beneficial to consider alternative measures of entrepreneurship, such as the low-high aspiration ventures and more-less innovative ventures, which can potentially better capture the productivity level of entrepreneurial activities. These complementary analyses would contribute to drawing a more accurate picture of the impact of financial integration.

References

- Aisbett, E., Harrison, A., Zwane, A. (2006) Globalization and Poverty: What Is the Evidence? *MPRA Paper No. 36595*.
- Bruhn, M. and Love, I. (2014) The Real Impact of Improved Access to Finance: Evidence from Mexico. *Journal of Finance*, vol. 6, pp. 1347-1376.
- Demirguc-Kunt A. and Klapper, L. (2012) Measuring Financial Inclusion. The Global Findex Database. *World Bank Policy Research Working Paper*, no. 6025.
- Dupas, P. and Robinson, J. (2013) 'Saving constraints and microenterprise development: evidence from a field experiment in Kenya', *American Economic Journal: Applied Economics*, 5(1), pp. 163–192.
- Jinjarak, Y., Noy, I., & Zheng, H. (2013). Capital controls in Brazil - Stemming a tide with a signal? *Journal of Banking and Finance*, 37(8), 2938–2952.
- Norback, P. J., Persson, L., & Douhan, R. (2014). Entrepreneurship policy and globalization. *Journal of Development Economics*, 110, 22–38.
- Parker, S. C., (2018) *The Economics of Entrepreneurship*. Second edition. Cambridge University Press, Cambridge, UK.
- Prasad, E. S., Rogoff, K., Wei S-J., Kose, M. A. (2003) Effects of Financial Globalization on Developing Countries: Some Empirical Evidence. *International Monetary Fund Occasional Paper*, no. 220.
- Swamy, V. (2014) Financial Inclusion, Gender Dimension, and Economic Impact on Poor Households. *World Development*, vol. 56, pp. 1-15.
- Wang, P., Wen, Y., Xu, Z. (2017) Two-Way Capital Flows and Global Imbalances. *The Economic Journal*, vol. 127, pp. 229-269.