

# Foreign Direct Investment and Financial markets

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The role of financial development on growth

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## Abstract

In this paper, we analyze the link between FDI and financial market development on economic growth. We focused on whether countries with more developed financial markets are able to exploit FDI more proficiently. Several indicators relating to the working of a country's financial market have been used. Our estimations are based on an unbalanced and a balanced dataset, covering the period 1985 to 2008. We find no significant direct impact of FDI on economic growth. Also, our results indicate that while the combined impact of FDI and financial market on growth is not significant, stock markets trigger economic growth. Our results are robust across both datasets; even after controlling for other factors affecting economic growth.

[Keywords: FDI, financial markets, growth]

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## 1. Introduction

The traditional view revolving around foreign direct investment (FDI) is that it is seen simply as foreign capital which could improve the economy of the recipient country. These inflows of foreign capital, acting as a substitute for low domestic savings, could trigger economic development. Foreign direct investments not only relate to economic benefits, such as an increased level of productivity, but could also positively impact the recipient country's society (Letto-Gillies, 2005). FDI affects a country's society, as it raises the level of human development of the country by reducing the illiteracy rate, increasing the standard of living and by increasing the life expectancy.

The consensus in the literature is that foreign direct investment affects the host economy's economic development through two channels. First, FDI directly affects the level of capital available to economic activities, by generating new job opportunities in the host country. Second, FDI can be seen as a channel through which technology is transferred from a more technology-advanced economy to less-technology-advanced ones. Theory also predicts that modernization will take place in the business sector and that the FDI recipient country's knowledge level will increase, since training opportunities provided by multinationals increases employees' skills.

FDI is not only a hot topic in the economic field, but also in politics as governments play a significant role in attracting FDI. An example is highlighted by Head (1998) which documented that the government of the state of Alabama offered an equivalent of \$150,000 per employee as an incentive for Mercedes to open a multi-level plant in Alabama. Other examples can be found in the works of Girma et al. (2001), highlighting the fact that governments directly affect the inflow of foreign capital.

One region where the inflow of FDI increased rapidly and dramatically over the past two decades is Latin America. One of the reasons for this was because of the relaxation of the restriction applied by these countries on foreign capital flows during the late 1980s. The second motive explaining the sudden increase in FDI was due to the privatization wave which was implemented in Latin America

(Rivera- Batiz, 2003). However, not all Latin American countries benefitted, from these large foreign capital flows. Only Brazil experienced a rapid economic growth spur which was triggered by the inflow of foreign capital in the late 1990s. Some attribute the inability of Latin American countries to take advantage of FDI inflows to host countries' characteristics, such as lacking a proper financial market. As suggested by the International Monetary Fund (2007) and McKinnon (1973), financial markets play a huge role in a country's economic development. In this respect, a country's financial market should also exceed a certain threshold, in the sense that countries with poor financial markets are expected not to be able to take advantage from the inflow of foreign capital. Well-developed financial markets are, theoretically, better equipped to allocate capital to profitable investment projects, while lowering the cost of capital.

This paper attempts to link the combined impact of FDI and the financial market's development level on growth, as to contribute to the vast amount of literature in this field. This paper build on the results of a previous influential paper by Alfaro et al. (2004), where they analyzed the impact of FDI and financial markets on growth, using a cross-section dataset, covering the period 1975 to 1995. For each variable, they calculated the average over the period 1975 to 1995, so they could be able to perform a cross-section study. They suggest that the impact of FDI and financial markets played a significant role on growth, but their dataset contains approximately 80 countries, while their analysis period covered two decades. By using a larger dataset containing up to 103 countries- depending on the model- and by altering the study period, this paper challenges their findings. This paper follows a somewhat similar approach and uses period averages, over the period 1985 to 2008, to perform a decent cross-section analysis. The use of a larger dataset should provide a basis for discussion when comparing the results with the findings of Alfaro et al. (2004).

We find no evidence suggesting that FDI has a significant and direct impact on economic growth. Also, when assessing the impact of FDI and financial development on growth, our results suggest that the working of the credit market has no robust significant impact on growth, while stock market

development contributed to economic growth. Moreover, FDI significantly affect growth only when our models control for domestic investment rates. However, none of our models suggest that the combined impact of FDI and financial markets is significant. Although the combined impact of FDI and financial development is not significant, the results suggest that a well-developed stock market does have a significant impact on growth. All of these results are robust across our unbalanced and our balanced sample.

This remainder of this paper is structured as follows. Section 2 provides the reader with the necessary theoretical background information to better grasp the concepts of FDI, financial markets and their impact of economic development. Section 3 introduces the empirical framework used for our analyses, covers the data used as well as the econometric methodology used throughout the analysis. Section 4 focuses on the results obtained from our models and goes over the implications of these results. This section also relates to the robustness of our models, while concluding remarks will be provided in the last section of this paper.

## 2. Analyzing the literature

The impact of FDI inflow on the host country's economic development has been amply analyzed in the literature. This section covers some of the most influential findings in the literature relating to FDI, its impact and its link with economic growth. First, this section focuses on the differences between horizontal and vertical FDI. Then, different findings in the literature regarding the impact of FDI on growth will be analyzed. We will briefly review the potential spill-over channels, after which some policy challenges revolving around attracting FDI will be discussed, and this section finishes with the development of financial markets and its role on influencing economic development.

## 2.1 Vertical vs. Horizontal FDI

To understand how FDI affects the host country's goods and services markets, its export and its development, it is important to distinguish between the two types of FDI, namely vertical and horizontal FDI. Vertical FDI has also been called outsourcing or off-shoring. Even though during our analysis no distinction will be made between vertical and horizontal FDI, to fully grasp the concept of FDI a proper comparison is needed. Horizontal FDI differs from vertical FDI in the sense that horizontal FDI covers multi-plant firms roughly duplicating their production processes abroad in several countries, whereas vertical FDI covers multi-plant firms setting up a network of different production processes across different countries. The reason behind vertical FDI is to locate different production stages at different locations around the world, to minimize the production costs, whereas the logic behind engaging in horizontal FDI is to gain market access to a foreign market. Since the majority of FDI flows are between developed countries, Brainard (1993) suggested that FDI is mainly used to access potential foreign markets, rather than to reap the benefits of cheaper production costs in less developed countries.

According to Markusen (1984), horizontal FDI revolve mostly around the trade-off between trade costs and plant level fixed costs. If the potential FDI recipient country is small, then potential trade cost savings will not be sufficient to compensate the fixed costs of building a new plant, which is the reason why in such scenarios export is preferred over FDI. On the other hand, if the potential recipient country is sufficiently large, the savings from trade cost will more than off-set the fixed costs involved of setting up a foreign production plant, leading to FDI rather than exporting goods to that overseas market (Glass, 2008). Therefore, it can be stated that horizontal FDI depends on the host country's market size, potential trade savings and multi-plant fixed costs: if these three conditions are favorable, then horizontal FDI will surely take place. However, the loss of economies of scale in the domestic production facility should not outweigh the gains from horizontal FDI. This is more commonly known as the proximity-concentration trade-off and indicates that firms tend to

choose FDI over exports when transport costs are relatively high and trade barriers are in place and the lower the size of scale economies (Brainaird, 1997).

An assumption in standard horizontal FDI models is that the investing country and the recipient country are of relatively similar size (Hanson, 2001). He also suggests that this does not have to hold when analyzing vertical FDI. Theory suggests that firms penetrate foreign markets using horizontal FDI when the countries are of similar size, and through vertical FDI when the production cost differentials are sufficiently large.

Since the majority of FDI flows occur between developed countries, one could argue that vertical FDI does not occur. However, Braconier et al (2005) found support for the existence of vertical FDI and suggested that this is an important factor for the host economies' development. Reality also suggests the existence of vertical FDI, if one looks at the amount of multinationals situated in developing countries, where production costs are extremely low compared to the home country's costs. When looking at the Markusen and Venables framework (2005), it suggest that vertical as well as horizontal FDI can take place, depending on different factors, affecting both the export platform and the market-oriented platform of FDI- one example could be the host country's factor endowment. Additionally, EmamiNamini and Pennings (2009) documented that horizontal FDI tends to lead to a complementary relationship between the multinational firm and domestic firms, regardless of all firms' technology level. When looking at the relationship between foreign and domestic firms, when it comes to vertical FDI, the relationship is much more complex. According to them, vertical FDI could lead to a substitution relationship between foreign and domestic firms if two conditions are met. The first condition is met if there is a sufficient large gap between the factor shares of the intermediate goods of the domestic and the foreign firm, while the second condition is met if the foreign and the domestic intermediate goods have a sufficient large different share in the final good of the firm.



## 2.2 Impact of FDI on economic development

The impact of FDI on economic growth has been debated since the 1950s, when Singer (1950) documented that host countries of FDI do not benefit from FDI inflow, since the bulk of these benefits are transferred back to the home country of the multinationals. Singer suggested that FDI limits growth rates because of the misallocation of capital. The same conclusion was reached by the findings of Prebisch (1968) as well. By analyzing the impact of FDI on U.S. firms, Bos et al. (1974), suggested that FDI inflows negatively affect economic development, if a country exports a larger amount of capital compared to its import of foreign capital. The analyses of Bos et al. (1974) covered the period 1965 to 1969. When looking at the impact of FDI on the economic growth of developing countries, Saltz (1992) suggested that there is a strong negative correlation between these two variables during the period 1970 to 1980. He suggested that due to monopolization and transfer pricing practices, the labor force of the host country will be under-utilized which causes lagged levels of consumption in the host country, stagnating economic development. However, there are alternative studies obtaining different results. For instance, Carkovic and Levine (2002) suggested that, by using the Generalized Method of Moments panel estimator, FDI did not have an independent impact on economic growth- not even when education levels, trade openness and the current level of development was controlled for. Their dataset covered developed as well as developing countries, for a total of 72 nationalities, and covers the period 1960 to 1995.

On the other hand, there are numerous studies which suggest that FDI does have a significant and positive impact on a country's economic growth. For example, a study by Barrel and Pain (1999) analyzed the impact of FDI, originating from the USA, on economic growth for four countries belonging to the European Union, and concluded that FDI could have a positive impact on economic growth due to knowledge and technology transfers. In 1999, Bosworth and Collins analyzed the effects of capital inflows for 58 countries over the period 1978 to 1995. By using panel data estimation techniques they analyzed countries in Latin America, Asia and Africa, and documented

that foreign capital has a significant and positive effect on economic growth. Also, when looking at the impact of FDI in transition economies, the findings of Campos and Kinoshita (2002) suggest the impact of FDI is consistent with the theory, stating that FDI results in the transfer of technology which will benefit the recipient economy. Their analyses comprised mostly Eastern European countries which were benefitting from the transfer of technology into their economy. Similar results were provided by the works of Madura and Picou (1990) and Hooley et al. (1996).

As a study by Borensztein et al. (1998) suggest, FDI inflow is one of the primary mechanisms through which technological transfers occur. This study entailed 69 countries and focused on the relationship between FDI inflow and economic growth covering the period 1970 to 1998. According to this paper, technology usually transfers from leading economies to developing economies. However, developing countries should need to have a minimum threshold of human capital in place in order for them to benefit from FDI inflow. Some other prerequisites for FDI to have a positive impact on economic development are proper infrastructure, economic and political stability and a liberal economic condition. Countries lacking these characteristics are unable to generate new ideas, innovate and efficiently implement these innovations. Through FDI, multinational enterprises (MNE) can cause spill-over effects which can benefit the host economy. Moreover, technology transfer to a developing country can also occur through the import of intermediate goods. These findings were consistent with those of Balasubramanyam et al. (1996), where one of the main results was that foreign capital had a larger impact on growth than domestic investments. The findings of Keller (1996) and Borensztein et al. (1998) suggest that in most of the cases the interaction term of human capital and FDI inflow have proven to be significantly affecting growth. Similar results have also been obtained by Xu (2000). Xu used data on US multinational enterprises to determine the impact of FDI inflow on productivity and economic development of the host economy.

In addition to meeting a threshold of human capital, broad economic liberalization seems to play a role, as documented by Bengoa and Sanchez-Robles (2003). By using a dataset containing 18 Latin

American countries covering the period 1970 to 1999, they used a two-step approach to investigate the impact of economic freedom in shaping the relationship between FDI inflows and growth. The first step in their analysis was to analyze the link between economic freedom and the attraction of FDI. Their second step was to focus on the impact of FDI inflow on per capita growth. They used the Fraser Institute as well as the Heritage Foundation definition for the construction of their economic freedom variable. Both comprise features like the degree of openness of the economy, corruption in the domestic economy as well as the limit of government intervention in the domestic economy. Their results suggest that having a proper institutional framework and less state regulation lead to significantly higher FDI inflow. Furthermore, FDI do have other positive effects beyond an improved domestic environment on the host country's economy. Domestic firms can gain additional managerial and operational skills by interacting with MNEs. By improving communication and transportation infrastructure, FDI facilitates the distribution and the export of the host economy's raw materials. Proper roads and ports are necessary for foreign firms to export their products to foreign markets. The interaction between foreign firms and domestic firms raise the host country's human capital quality and their know-how. The model of Bengoa and Sanchez-Robles (2003) suggest that domestic firms' experience productivity increase, because they implement procedures which foreign firms use.

Countries should make an effort to attract FDI since this could benefit the entire economy. FDI inflow can lead to productivity gains, as proposed by Alfaro et al. (2004). With respect to the productivity gains from FDI, a study by Aitken and Harrison (1999) revealed that the net effect of FDI on firm productivity is rather small. By analyzing plant level data in Venezuela they documented that FDI inflow lowers productivity levels of domestic firms whilst increasing productivity levels of FDI receiving firms. Their results are in contradiction of the spill-over theory proposed by several authors analyzing FDI impact of growth. In addition, Alfaro et al. documented that FDI triggers the introduction of new processes in the economy, increases know-how in the host economy and they

also agree with the conclusions of Borensztein et al. (1998) and Blalock and Gertler (2005), that FDI is an important mean facilitating technology transfers. Moreover, FDI can aid the process of setting up advanced international production networks. According to Agrawal (2000) FDI also encourages domestic investments via the backward and forward linkages it creates with firms in the domestic industry. He also suggested that there is a complementary condition between FDI inflow and domestic investments- and that this relationship would only grow if there were no restrictions on foreign equity share. He suggested that policy makers should fully ban restrictions on foreign firms acquiring domestic equity, since by doing so a larger amount of FDI inflow will follow which will exert positive economic development.

One country which proved the world how FDI could contribute to growth is Cambodia. Foreign direct investments have had a significant and positive impact on the development of Cambodia in the period 1994 to 2004. FDI increased the level of technology in Cambodia drastically, as suggested by the findings of Cuyvers et al. (2008). In addition, Chap (2005) reported that technology transfer had taken place in the form of foreign management teams and through the import of machines. He concluded this after analyzing 60 Cambodian firms at their firm-level regarding technological transfer from foreign firms to domestic firms. FDI also affected Cambodia's trade pattern, since the majority of the FDI inflow was mainly to benefit from the lower production costs (Cambodian Investment Board, 2007). As a result, Cambodia's export has increased dramatically. According to the Cambodian Investment Board (2007), FDI has had an annual average input of approximately 21 percent over the period 1994 to 2004, thereby increasing the capital stock available in the country; which ultimately contributed to its economic development.

In addition, TeVelde (2003) argued that FDI will have an impact on different aspects of society; from affecting the employment of domestic workers to the political and cultural status quo of the host country. He suggested that foreign firms have two types of effects on society, static and integrated effects. When addressing the static effects, he documented that foreign firms tend to pay higher

wages compared with domestic firms, that foreign firms are more likely to be more capital and trade intensive and that foreign firms are more likely to be found in sectors with entry barriers in place- one example of an entry barrier is high upfront investments. Caves (1996) also documented that foreign firms tend to pay higher wages, while also being more capital intensive. Not to mention that these foreign firms are most of the time more skill intensive in their use of technology than the domestic firms. TeVelde<sup>2</sup>documented the existence also of a variety of dynamic effects. For example, he suggested that FDI decreases the unemployment rate immediately, and provide a steady income for its employees. FDI also provide a stable source of foreign capital, thereby raising the physical capital in place of the host country, while also helping the host country to gain access in other foreign markets through a complex network brought by the multinationals. The general consensus is that FDI serves as a catalyst for economic development in poor countries, therefore contributing to poverty reduction in these countries indirectly. This was also documented by Zhang (2006), who suggested that FDI enhances employment and capital formation, while contributing to increased exports in the manufacturing industry and to positive spill-over effects on the domestic economy.

Also, Abramovitz (1986) identified social capacity as one of the prerequisites for FDI to affect economic growth. Social capacity is a broad notion relating to human capital, economic as well as political stability, market liberalization and proper infrastructure. Following the importance of human capital, Benhabib and Spiegel (2002) highlighted that host countries should increase their level of human capital, which in turn will increase their capacity to absorb FDI inflow better- human capital has constantly been highlighted as a crucial pre-requisite for FDI to affect growth. Also relating to the social capital argument, Benassy-Quere et al. (2001) found that exchange rate stability, and therefore economic stability, plays a huge role in attracting FDI, while political stability is also a relevant factor as suggested by Lipsey (1999). One of the main barriers for foreign capital is the lack of a proper infrastructure. This has been actively advocated by Obwona (2001), where he blames the lack of

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<sup>2</sup>For further understanding of all these static and dynamic impact, consult the work of TeVelde (2000), entitled Foreign Direct Investments and Income Inequality in Latin America

infrastructure to be the reason why developing countries are not properly represented in the overall world FDI<sup>3</sup>.

### 2.3 Spill-over channels

However, when addressing the spill-over effects of FDI, the results in the literature are unclear. Most of the spill-over studies have been carried out by means of micro econometrics and are, unfortunately, limited to the manufacturing sector of the host country. The results of Blomström and Sjöholm (1999) indicate that firms within the same industry are more likely to gain from this new player in the market, since fierce competition demands domestic firms to become more efficient and more technology advanced. Nevertheless, domestic firms can also be worst off if foreign firms flood the market with lower priced goods, as has been the case in Venezuela (Aitken and Harrison, 1999), but it can also be the case that the technology and productivity gap between foreign and domestic firms is extremely large, thereby minimizing the interaction between these firms. In addition, academics such as Haddad and Harisson (1993) suggest that the productivity of domestic firms is lower compared to that of multinationals within the same industry, while the effects of multinationals on domestic firms are mixed.

Theoretically, FDI could cause positive externalities through the so-called spill-over effect. Even though the findings in the literature are mixed, theory discusses some mechanisms through which this can take place. The consensus in the literature is that there are three spill-over channels, namely, the so-called (i) *labor turn-over effect*, the (ii) *demonstration effects* and through (iii) *vertical linkages*.

Labor turn-over effects simply relates to the unavoidable fact that some trained employees will leave the multinational firm and start their own firm or, simply, just switch employers. During this process, the employee will use his or her newly gained knowledge elsewhere, thereby contributing to the diffusion of knowledge. This labor turn-over effect can only take place through the physical

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<sup>3</sup>The paper of Nunnenkamp and Spatz (2004) provides a much more detailed list of factors affecting the impact of FDI, which may provide the reader with an extensive theoretical basis in this area

movement of employees from multinational enterprises to local domestic firms. Some authors which found evidence supporting this spill-over channel are Rhee (1990) and Pack (1997). The demonstration effect relates to domestic firms implementing the same technologies used by multinationals by means of imitation. High implementation costs make it difficult for domestic firms to acquire the latest technology. FDI makes it possible for domestic firms to imitate foreign firms and acquire their technologies. FDI increases the set of available technologies out of which domestic firms could imitate<sup>4</sup>. The last potential spill-over channel refers to the vertical linkages which may arise between multinationals and domestic firms. Multinationals may encourage the transfer of technology to domestic firms when these are suppliers of intermediate goods to the multinational firm. Rodriguez-Clare (1996) suggested that multinational firms only contribute to economic growth if the linkages they generate, such as buying intermediate goods from domestic firms, in the host economy are beyond the ones they replaced, which initially were generated by local domestic firms.

## **2.4 Policy challenges when attracting FDI**

Given the diverse set of findings we have discussed in the literature and the intensity of policy makers and economists' debate about FDI and its impact, it is only logical to assess the challenges some host countries face when attracting FDI. If a country believes it can benefit from the spill-over effects of FDI, it should take an active approach towards FDI and guide these foreign capital inflows to achieve economic development. According to Lall, (2002) information gaps between the host country and the investing country should be minimized as to facilitate the investment process, whilst promoting active linkages between domestic firms and the multinational enterprises.

In an influential paper by Willem teVelde (2002) he presented ten important policy challenges countries face while attracting foreign capital investments. This section will briefly touch some of these challenges and link them with some real life cases in where a country failed or succeeded in

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<sup>4</sup>For a better understanding of this mechanism, consult the Leader-Follower model of Barro and Sala-i-Martin (1997)

dealing with that particular challenge. One of the challenges is for countries to think in terms of *quality instead of quantity*. According to official FDI data, obtained from UNCTAD, Sub-Saharan Africa's share as a recipient of total world FDI is approximately 10 percent as of 2011- this is only a fraction compared to the developed economies. Chad has been receiving a comparatively large amount of FDI destined for their oil industry in recent years (UNCTAD, 2002), while Singapore has been receiving less FDI compared to previous years. However, this should be viewed carefully, since for Chad, the long run economic benefits of FDI are far smaller than those enjoyed by Singapore- FDI was poured into Singapore's technology industry. The reason is that while FDI towards natural resources may generate huge short run economic gains, it does not offer sustainable economic benefits in the long run, making the FDI destined to Singapore's technology industry more attractive. Countries should not get sidetracked by the amount of FDI flowing into their economy; rather they should focus on the long run impact of. Another challenge for countries is to *prepare well* by providing *proper infrastructure and human capital*, as was the case with Malaysia. The government of Malaysia has been heavily investing in its country's infrastructure and in its country's education system as to better equip the country to absorb and manage the inflow of foreign capital (Tsen, 2005). As a result, multinationals have rewarded Malaysia with a huge inflow of foreign capital on an annual basis, providing the country with the capital needed to pursue lucrative economic opportunities and thereby contributing to the country's economic development. In contrast, Sub-Saharan African countries, such as Angola and Cameroon, lack the necessary human skills and infrastructure to attract FDI. This was documented by Noorbaksh et al. (2001), where he also suggested that infrastructure entailed proper roads, ports, telecommunications and stable electricity supply. Similar results have also been obtained by Wheeler and Mody (1992). Also, according to TeVelde, countries should *facilitate trade and promote linkages within their capacity*. Since multinational enterprises vested in developing countries are more oriented towards exporting their products, countries should facilitate the export process for these multinationals. Considering the



importance of export, countries should implement efficient processes regarding customs, shipping, handling and the administrative work related with all these processes. Setting up free trade zones could promote trade, as has been done by South Korea (South Korean Ministry of Foreign Affairs and Trade, 2012). Moreover, countries such as Mauritius, have successfully implemented several Export Processing Zones. Finally, a country aspiring to become a major FDI recipient should also promote an active link between its domestic firms and the multinationals operating in the host country. These linkages could promote development through employment as well as through joint ventures. Unfortunately, this is not the case in Nigeria, where multinationals are not properly linked to domestic firms, thereby impeding the opportunity to develop solid links which could benefit the country.

## **2.5 Financial market's impact on economic development**

The first and foremost question regarding financial markets is naturally "Do financial markets promote economic growth?" However, the answer to this question is all but simple. The importance of financial markets for a country has been carefully discussed in the work of Bagehot (1873), Hicks (1969) and Grossman and Miller (1988), where they suggested that financial markets are crucial for a country's economic success. Schumpeter (1912) suggested almost a century ago that a country can only benefit from a well-developed financial market, since it will facilitate capital allocation which in turn will lead to economic growth. In 1993, King and Levine, provided systematic support for Schumpeter's argument that financial markets promote economic development. By analyzing over 80 countries during the period 1960 to 1989, and using cross-section data, they concluded that financial markets do trigger economic growth. These findings show that this topic has been a long debated subject in both economics and finance.

The development of a country's financial markets revolves around five important aspects, which are (i) *mobilizing and pooling of household savings*, (ii) *providing information regarding profitable*

*investment opportunities and capital allocation, (iii) exerting corporate governance through firms monitoring, (iv) risk management through diversification and, last but not least, (v) facilitating the exchange of goods.* This section covers these five aspects of financial development and discusses some important findings which are documented in the literature.

- (i)** Mobilizing and pooling household savings revolves around the time consuming and costly process of accruing a country's total household savings. Financial intermediaries, such as banks, can pool household savings at minimum cost. Financial intermediaries are entrusted with many agents' excessive resources, which they can allocate to meet the demand for capital. Financial intermediaries can help overcome high transaction costs since economies of scale brings the cost per unit of output down, while also reducing the information asymmetries when pooling savings. Banks introduce a system of checks to obtain all the relevant information of their clients. Furthermore, due to this pooling of savings by financial markets, a country can experience higher capital accumulation which leads to technological progress and ultimately to economic development.
- (ii)** Providing information regarding profitable investment opportunities and capital allocation refers to the huge costs which need usually to be met to assess a firm's performance, to assess the market in which it operates or to assess any other aspect of a firm. Since individual agents may not want to incur these monitoring costs, financial intermediaries sweep in to incur these monitoring costs. As a result, lower information costs may lead to a more efficient allocation of capital flows, which would also promote growth (Greenwood and Jovanovic, 1990; Kashyap et al., 1998).
- (iii)** Exerting corporate governance on firms entails the entire process of gathering and processing valuable information. While financial intermediaries gather and provide information relating to investment opportunities, they also monitor the execution of

these investments and the returns of these investments. The Agency Theorem prevents an efficient allocation of capital flowing to viable investment opportunities, as has been suggested by Myers and Majluf (1984). The agency theory suggests that the principal contracts the agent to perform a task, but since the objective of the agent is not in line with that of the agent, the principal will pursue its own interest. In reality, agents are firms' executives, while the principals are the firms' shareholders. In this respect, Dow and Gorton (1997) report that well developed equity markets may provide managers with the proper incentives to make profitable investment decisions without only focusing on the short run economic gains<sup>5</sup>. Because executives are mainly judged by a firm's economic profit, they tend to engage a firm's resources in risky projects. Excessive risk-taking, because of a mismatch of interest between shareholders and executives, could lead to financial distress. This has also been highlighted during the current financial crisis. Moreover, according to Diamond (1984) financial intermediaries will automatically cultivate an environment where corporate governance is properly exercised, since it minimizes the free rider phenomenon. However, the recent financial crisis has proven that this is a rather ideological concept. Bencivenga and Smith (1993) takes this a step further, by stating that a better execution of corporate governance lowers credit rationing, thereby causing increased productivity, capital accumulation and economic growth. De la Fuente and Marin (1996) reach a similar conclusion, although by suggesting economic growth occurs through a different channel. They suggest that because of improved resource allocation among competing firms, economic growth will follow.

- (iv)** Risk management through diversification covers mostly cross-sectional diversification of risk. Financial markets reduce individual risks attributed to a specific firm, industry or country. According to the findings of Acemoglu and Zilibotti (1997), risk mitigation

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<sup>5</sup>Their argument is that by compensating managers through an equity-based scheme, the agency problem can be addressed. However, a well-developed financial system should be in place, otherwise it could not work.

translates into higher growth rates per capita, since financial markets give agents the opportunity to invest in a well-diversified risky portfolio. Their model emphasized the endogenous risk associated with the economic growth process. Similar results have also been obtained by the International Monetary Fund (2007).

- (v) Financial markets facilitate the exchange of goods through lower financial costs which contribute to technological innovations through specialization: leading to economic growth. One of the first influential contributions to the literature in this area was done by Goldsmith (1969) where he documented a positive causal correlation between a country's level of financial development and its economic growth. The origin of this argument lies with the publication of Adam Smith's *Wealth of Nations*, where he suggested that financial markets promote the exchange of goods and specialization, since financial intermediaries lead to lower transaction costs. More recent publications, such as those of Greenwood and Smith (1997), suggest that since specialization requires more transactions, financial intermediaries promote further specialization. Therefore, financial markets lead to a better exchange of goods, which in turn will promote growth.

To further assess the importance of financial markets on economic growth, we look at the contribution of Demetriades and Hussain (1996). They suggested that financial markets do not necessarily promote economic development, by using a Granger causality test on a sample of 10 countries. But, by analyzing 13 OECD countries, Neusser and Kugler (1998) reported that financial markets do precede economic development- their analysis was also based on a Granger causality approach. Also, Shabbier (1997) studied the link between financial markets and growth for two separate groups of countries- developing and developed countries-, and reported that financial markets played a significant role in triggering economic growth. Their results were robust across their two datasets. Filler et al. (2000) also studies the link between financial markets and growth, by using

a Granger causality approach, and suggested that there is little evidence supporting the theory that stock market development triggers economic growth. However, the findings of Levine et al. (2000) support the notion that financial markets positively affect economic growth. Scott Baier and Dwyer (2003) documented that opening a stock exchange market will trigger growth, since the economy will experience a productivity growth which can be attributed to the stock market, while Hermes and Lensink (2003), suggest that a well-developed financial market contributes to FDI's impact on growth. More recent findings supporting the concept that financial markets contribute to economic growth are the findings of Mihalca (2007). Mihalca questioned the connection between Romanian's financial markets and Romanian's economic growth achieved over the period 1995 to 2005. By constructing a model based on a Cobb-Douglas production function, she documented that financial markets did contribute significantly to the economic growth which was achieved in Romania. Moreover, Amaral and Quintin (2007) took their analysis a step further by attempting to quantify the impact of variations in the quantity of financial intermediation on output and productivity using a dynamic general equilibrium model. Their results indicate that a well-developed financial market increases output because of an improved allocation process of capital. Finally, Azman-Saini et al. (2010) concluded that for FDI to have a positive effect on economic growth, the level of development of the host country's financial markets should exceed a minimum threshold level. Their model is based on a regression model capturing the importance of some threshold effects, covering 91 countries over the period 1975 to 2005. Their findings suggest that countries should attract FDI, while simultaneously promoting financial development, in order to be able to benefit from foreign capital inflows. Hermes and Lensink's findings imply that financial market development mitigate investment risks, thereby improving a country's absorptive power to deal with the inflow of foreign capital. The same conclusion was reached by Villegas-Sanches (2009) where she documented that domestic firms benefit only in the presence of a well-developed financial market.

## 3. Empirical model

### 3.1 Data

To analyze the link between FDI, financial markets and economic development, we have collected a large cross-country dataset.

Data measuring FDI have been collected from The World Development Indicators data set, which is made available by the World Bank. The World Bank collects data on net inflows of investment from abroad, and they are classified as FDI flows if they are meant to acquire a lasting management interest of 10% or more (World Bank, 2012). According to the formal definition of the World Bank, foreign direct investments, measured as net inflows as percentage of a country's GDP, is the sum of a country's received foreign investments entailing equity capital, reinvestment of earnings, short term capital and other long term capital. These values are all published in a country's Balance of Payment, as suggested by the World Bank. Our analysis will focus on net FDI inflows rather than gross FDI flows. We use FDI inflow data rather than FDI stock data because positive externalities can be mainly attributed to recent inflow of foreign capital.

Assessing a country's financial market development is a challenging task, since there is no single measure to assess the entire structure of financial markets. However, by analyzing different aspects of a country's financial market, better insight will be gained into the impact of a country's entire financial market on growth. Loosely speaking, a country's financial market can be divided into two broad submarkets that are closely intertwined: the credit or banking market and the stock market. Importantly, several indicators measuring a specific aspect of a country's financial market are available in the World Bank Financial Structure database (2012).

To assess the level of development of the host countries' financial market, four variables defining the credit side of the financial markets and two variables analyzing the stock market side of the host

countries' financial markets will be used. The first variable is the *Liquid liabilities of the financial market divided by GDP*, denoted as *LIQL* throughout our analyses. This variable measures the amount of currency in circulation plus the interest bearing liabilities of commercial banks and non-financial intermediaries over GDP. This variable relates to central bank, deposit money banks and other financial intermediaries' liquidity, which is why this variable roughly measures the overall size of countries' financial market. However, it should be clear that this measurement does not say anything about the efficiency of a country's banking sector (Demetriades and Hussein, 1996). The second indicator concerning the functioning of a country's financial market is *Commercial Banks assets over Commercial Banks' and Central Bank's Assets*, denoted as *CCBA*, which measures the degree to which commercial banks allocate society's savings. According to Levine et al. (2000) this measure provides an indicator relating to the relative overall importance of the different financial institutions. The third variable we use is *Private Credit by Deposit Money Banks and Other Financial Institutions over GDP*, and denoted as *PVCR*. This variable is defined as the claims on the private sector by deposit money banks and other financial institutions divided by GDP (World Bank Financial Structure, 2012). Theoretically, countries with higher levels of *PVCR* should achieve larger and faster economic growth compared to the rest, as was suggested by Beck et al. (2000). As Levine et al. (2000) suggest, this variable is to be preferred when assessing a country's financial development, since it measures the efficiency of a country's banking sector in credit provisions. Alfaro et al. (2004) reports that *LIQL* and *CCBA* do not distinguish between the end-users of financial claims, while *PVCR* focuses only on financial claims in the private sector and not in the public sector. The fourth variable we use is the *Commercial Banks' Credit over Commercial Banks' Deposits*, denoted as *CBCBD*, which measures the availability of credit by commercial banks. According to the World Bank Financial Structure, *CBCBD* is defined as private credit by deposit money banks as a share of demand, time and saving deposits in deposit money banks (2012).

Our first measure of the working of the stock market is the *Stock Market Total Value Traded over GDP*, denoted *STVT*, which measures the stock market activity as proposed by Levine and Zervos (1998). This variable relates the value of all stocks traded to the overall size of a country's economy. Finally, the second variable capturing the work of the stock market is the *Stock Market Turnover Ratio*, denoted as *STURN*. This variable is defined as the ratio of the total shares traded to average real market capitalization. This variable measures the liquidity of a stock market relative to its size, since active stock markets have a higher turnover ratio than a less liquid stock market.

Due to limitations in data availability, each model will entail a different set of countries. So, the basic model analyzing the direct impact of FDI on economic growth comprises 103 countries covering the period 1980 to 2010, after which three sub-samples of the total dataset were created. The first sub sample entails an unbalanced dataset covering all the four variables revolving around the credit side of the financial market as well as the two financial variables measuring the working of the stock market side of a country's financial market. This unbalanced sub sample covers all of the countries in the original dataset. In order to check for robustness of our models, two balanced sub samples have been created as well; one sample covering the working of the credit market entailing 47 countries, while the second balanced sub sample covers the working of the stock market and contains 49 countries. The models investigating the interrelationship of FDI and financial market on growth covers the period 1985 to 2008- due to limitations in the availability of the data, the analysis period has been slightly shortened, from 1980-2010 to 1985-2008. Appendix 1 reports the countries belonging to each individual sub-sample.

Our analysis is based on long term averages since this will correct for the short run business cycle fluctuations in data. However, this could lead to mis-estimation of our models. Since all models will analyze the different determinants of economic growth, selecting the most appropriate measurement of economic growth is crucial. To correctly assess the growth, the average GDP per capita growth has been calculated over the period 1980 to 2008. The GDP per capita growth has



been obtained from the World Development Indicators- WDI for future references. In addition, we have also used GDP per capita data obtained from the WDI database.

In order to construct proper models and not to mis-estimate the influence of FDI, in addition to initial GDP per capita and a country's financial market, several macroeconomic control variables will be included in the models. We start by including a country's inflation rate, defined as the consumer prices in annual percentages, since inflation rates are used as proxies for stable economic policies implemented by the government. Inflation rates measures the ability of a government to properly manage their country's economy, as has been suggested by Fischer (1993). Population growth has also been included as a control variable, since this also affects economic growth in the short run, as suggested for instance in Solow-Swan growth model<sup>6</sup>(1956). In addition, openness to trade will also be included in the models, which is defined as a country's total export and import as percentage of that country's GDP. The reason why trade was included in the analysis is mainly because of the findings of Frankel and Romer (1999), Baldwin (2003) and Wolf (1993), where they suggest that openness to trade will positively affect a country's economic development. Also, our models also control for government spending, measured as the central government expenditures as a percentage of GDP, as a control variable. Inflation rates, government spending, population growth rates as well as openness to trade have been obtained from the WDI database. Finally, educational levels will also be included in the models, since economic growth models-Barro (1991; 1997) and Stevens and Weale (2003)-have emphasized that the availability of human capital an important determinant is for economic development. Education has been measured as the average years of schooling attained, which has been obtained from the Barro-Lee dataset<sup>7</sup> (2012).

### ***Descriptive statistics and correlation***

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<sup>6</sup>For further understanding of this model, consult the work of Robert Solow and T.S. Swan (1956)

<sup>7</sup>Since this dataset does not have yearly data on education, the missing values were simulated using the interpolation technique

Table 1 reports the descriptive statistics of the dataset. The table consists of two parts, namely the statistics of the sample analyzing the direct impact of FDI on growth and the unbalanced sub sample focusing on the role of financial markets on growth. Looking at the figures concerning the first sub sample, we can see that Initial GDP, FDI and Inflation show the most fluctuations- when comparing the standard deviations with their respective mean over the period 1980 to 2010. This stands to reason, since our dataset contains several countries which differ significantly across their level of development. When it comes to inflation rate differences across countries, it should be clear that countries' government policies aimed at achieving macroeconomic stability differs. The variable GDP growth peaks at 8.885 percent for China, while the Democratic Republic of Congo has the lowest GDP per capita growth- the country has an average GDP per capita growth of -2.78 percent over the period studies in our analysis. Looking at the variable Initial GDP, it is worth mentioning that Burundi has had the lowest GDP in 1980- with a GDP per capita of roughly US \$ 135-, while Brunei Darrusalam had the highest GDP in that same year- US \$ 30504. Surprisingly, Japan has the lowest FDI inflow as a percentage of their GDP with an average annual FDI inflow of 0.09 percent, while Luxembourg had no trouble attracting foreign capital- averaging with an annual FDI inflow of 170 percent of their GDP. Last but not least, it is interesting to look at the inflation rates of the Republic of Congo and of Zimbabwe, since they show the lowest and the highest inflation rates respectively; -0.08% and 1145%.

If we look at the data for the *Finance* unbalanced data set, the results for the variables GDP growth and Initial GDP remains the same, with Luxembourg still showing the highest FDI inflow peaking at 186 percent of their GDP, whereas Gabon has the lowest FDI levels reaching roughly 0.1 percent of their GDP. Once again, Zimbabwe and the Congo Republic show the highest and the lowest inflation rates respectively, even though the sample period has been altered. High inflation rates harm economic development, since the purchasing power or household decreases.

To get a better insight into the data used throughout our analysis, a correlation matrix will have been calculated. In addition, a correlation test will be performed as to assess whether the correlation is statistically different from 0. The results are presented in table 2, where it is also indicated whether or not the correlation is significant. As is illustrated in table 2, inflation rates, trade, domestic investments and population growth are all significantly correlated with average GDP per capita growth rate, with the signs of the correlation being as expected. When looking at the variables relating to the work of the financial market, the table shows that *PVCR*, *LIQL*, *STURN* and *STVT* are all significant and have the expected signs.

# Table 1: Descriptive statistics

	<i>FDI on growth</i>						<i>FDI and Finance on growth</i>					
	<b>Mean</b>	<b>Sd</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>N</b>	<b>Mean</b>	<b>Sd</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>N</b>
GDP growth	1.62	1.70	1.58	-2.78	8.89	103	1.62	1.71	1.58	-2.78	8.89	103
Initial GDP	5907	7347	1910	135	30504	103	5900	7350	1910	135	30504	103
FDI	4.26	16.75	2.09	0.09	170.91	103	4.64	18.30	2.28	0.12	186.71	103
Inflation	47.15	171.40	6.44	-0.81	1145.17	103	53.63	205.71	6.42	-2.04	1457.70	103
Trade	80.55	52.30	65.75	20.36	359.79	103	81.12	52.53	68.12	20.34	356.09	103
Population	1.72	0.99	1.83	-0.51	4.22	103	1.68	0.96	1.78	-0.66	3.98	103
Government	15.65	5.13	15.67	4.78	32.58	103	15.53	5.19	15.12	4.73	34.23	103
Education	1.90	0.43	1.94	0.61	2.62	103	1.92	0.43	1.99	0.62	2.62	103
Investment	22.10	5.21	21.51	10.40	44.83	103	21.80	5.36	21.42	10.61	47.64	103
<i>PVCR</i>							0.35	0.23	0.27	0.40	1.08	90
<i>CCBA</i>							0.56	0.13	0.59	0.09	0.69	59
<i>LIQL</i>							0.39	0.20	0.38	0.11	1.10	84
<i>CBCBD</i>							0.64	0.16	0.65	0.23	0.93	98
<i>STVT</i>							0.22	0.20	0.18	0.00	0.73	50
<i>STURN</i>							0.31	0.21	0.32	0.00	0.94	56
<b>Period</b>	<b>1980-2010</b>						<b>1985-2008</b>					

## Table 2: Correlation matrix

Correlation matrix															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GDP growth	1.000														
Initial GDP	-0.052	1.000													
FDI	0.122	0.218**	1.000												
PVCR	0.350***	0.687***	0.169	1.000											
CCBA	-0.037	0.201	0.023	0.151	1.000										
LIQL	0.3439***	0.5981***	0.411***	0.864***	0.188	1.000									
CBCBD	-0.038	0.350***	-0.220**	0.509***	-0.070	0.094	1.000								
STVT	0.283**	0.508***	0.115	0.663***	-0.217	0.293*	0.520***	1.000							
STURN	0.382***	0.3360**	-0.197	0.351**	-0.358*	0.081	0.517***	0.725***	1.000						
Inflation	-0.296***	-0.148	-0.030	-0.116	-0.045	-0.133	-0.040	-0.232	-0.172	1.000					
Trade	0.267***	0.136	0.389***	0.367***	0.168	0.348**	-0.060	0.212	-0.166	-0.140	1.000				
Population	-0.304***	-0.447***	-0.066	-0.568***	0.036	-0.463***	-0.377***	-0.289**	-0.331**	0.091	0.029	1.000			
Government	-0.058	0.454***	0.037	0.225**	0.051	0.262**	0.169*	0.208	0.135	-0.121	0.120	-0.234**	1.000		
Education	0.104	0.498***	0.037	0.406***	-0.125	0.3145***	0.309***	0.387***	0.281**	-0.094	0.090	-0.481***	0.383***	1.000	
Investments	0.636***	0.032	0.043	0.260**	-0.038	0.4368***	-0.092	0.187	0.257*	-0.289***	0.315***	-0.191*	0.183*	0.205**	1.000

Table 2 depicts the results of a correlation test between the variable. \*\*\*, \*\* and \* indicate significance levels at 1%, 5 % and 10%, respectively.

### 3.2 Methodology

We start by reporting in figure 1a scatter plot illustrating the relationship between FDI inflow and GDP growth. The horizontal axis plots net FDI inflows, while the vertical axis plots average per capita GDP growth. It should also be mentioned that Luxembourg has been left out of the figure as it is a clear outlier, having experienced an average FDI inflow of 170 percent of GDP, while experiencing a modest 3.1 percent GDP growth over the period 1980 to 2010.

*Figure 1: Scatter plot of FDI and per capita GDP growth over period 1980-2010*

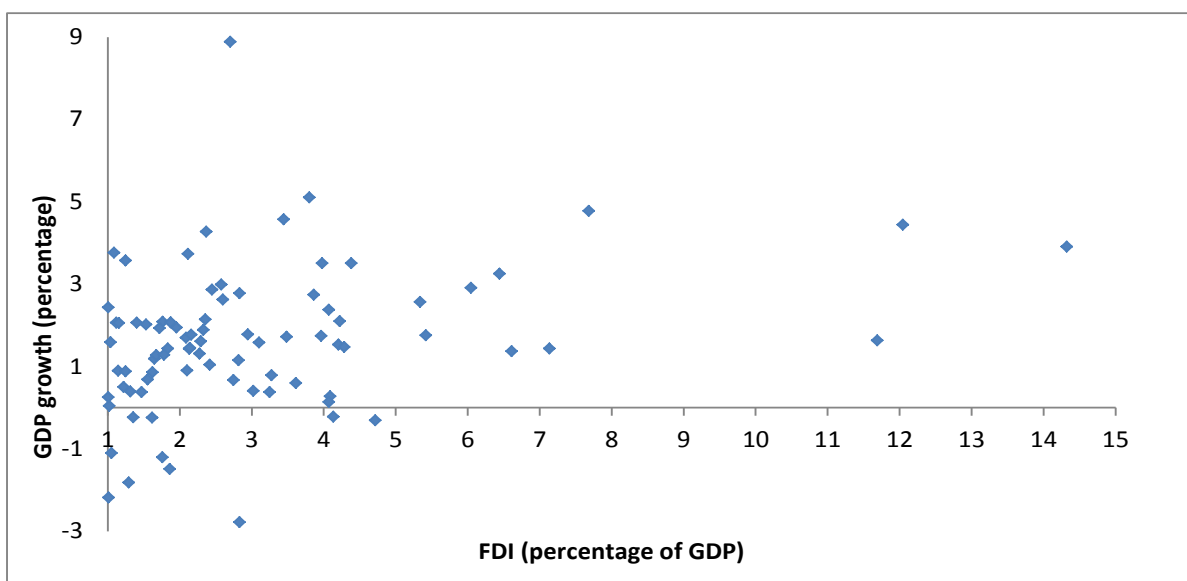


Figure 1 plots the 103 countries for which data on FDI and growth has been obtained. Luxembourg has been identified as an outlier, therefore it has not been included in the figure.

To empirically test the importance of FDI inflows and a country’s financial market development on its growth, we will consider several specifications. We will start by looking at the direct impact of FDI on growth. To ensure comparability, we will follow the same empirical procedure proposed by Mankiew et al. (1992). Importantly, they assume that it is extremely unlikely that countries have reached their steady state; and therefore the transitional dynamics of the specifications ought to be highly

important. Their analysis was based on the Augmented Solow growth model<sup>8</sup> and their findings suggest that countries' convergence rate roughly coincide with the convergence rates predicted by the augmented Solow growth model. To empirically test the direct impact of FDI on economic development, the first specification will be estimated:

$$GDP\ growth_i = \beta_0 + \beta_1 Initial\ GDP_i + \beta_2 FDI_i + \beta_3 Controls_i + \varepsilon_i, \quad (1)$$

where GDP growth denotes average GDP per capita growth over the period 1980 to 2010, while initial GDP denotes the GDP per capita of a country in 1980- denoted in constant 2000 US dollars. Our main variable of interest is net FDI inflow. Our specification includes also a series of additional controls and in particular, measure of inflation, trade openness, population growth, government spending as well as a country's education levels. Moreover, a sub-Saharan dummy and a Latin American dummy variable have also been included, as to keep in line with the literature<sup>9</sup>. The reason for including a Sub Saharan dummy in our models is because African ex-colonies have shown to experience slower economic growth compared to the rest of the world (Bertocchi, 1996). Also, we include a Latin American dummy since Londoño and Székely (1997), report that Latin America's characteristics ensure that it does not achieve large economic growth. Their findings touch the aspects of inequality in Latin America and of the large level of corruption, which also impedes growth. Also, notice that the letter *i* denotes a specific country, since the dataset is cross-country in nature. Fölster and Henrekson (2001) suggest that analyzing the impact of FDI on growth using panel data does not take the long run effects of business cycles into account, since the variables are measured annually. The results of this model should indicate whether or not FDI has a direct impact of growth. If the impact is significant, it should provide a rough support for the importance

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<sup>8</sup>The Solow growth model does not account for the magnitude of large productivity differences; neither does it match the theoretical physical capital share with reality. The augmented Solow growth model suggests that the convergence rate is lower. It generates reasonable parameters which accounts for the differences in productivity- without appealing to technology contributions to productivity. The Augmented Solow growth model also suggests that countries which have experienced large growth numbers over a short period of years, could have achieved this only because they found themselves far below their steady state equilibrium.

<sup>9</sup>Some examples are the works of King and Levine (1993) and Cohen (1998)

of attracting FDI as it can be expected to exert positive economic growth. However, if the results prove not to be significant, this paper has contributed to the vague findings in the literature analyzing FDI: theoretically, FDI should exert positive economic development, while empirically this relationship is not that straightforward and clear as theory predicts.

After analyzing the direct impact of FDI inflow on growth, a similar approach will be followed regarding the working of the financial market of the country. As Hamilton, Bagehot and Schumpeter (1871) put it 'banks are the happiest engines that ever were invented for creating economic growth', therefore the impact on growth should be positive. To empirically test this, the following econometric specification will be estimated:

$$GDP\ growth_i = \beta_0 + \beta_1 Initial\ GDP_i + \beta_2 Finance_i + \beta_3 FDI_i + \beta_4 Controls_i + \varepsilon_i, \quad (2)$$

where *Finance* each time denotes a different variable capturing one specific aspect of a country's financial market, while the interpretation of all the other variables remains the same.

After analyzing these two components' impact on growth separately, the next step is to test for their combined impact on economic development. As indicated previously, theory predicts that well-developed financial markets are a prerequisite for FDI to positively affect economic growth. This means that inefficient financial markets leads to inefficient levels of investments, lower economic growth and therefore lower GDP per capita growth. This indicates that well-developed financial markets should make a positive and significant contribution to a country's economic development. To properly explore the combined impact of FDI and financial markets on growth, the following econometric estimation emerges:

$$GDP\ growth_i = \beta_0 + \beta_1 Initial\ GDP_i + \beta_2 Finance_i + \beta_3 FDI_i + \beta_4 (FDI_i * Finance_i) + \beta_5 Controls_i + \varepsilon_i, \quad (3)$$

where  $(FDI * Finance)$  expresses the combined effect on growth, while the other variables' expressions remains similar. The variables FDI and *Finance* are both included separately in the specifications as



well, to guarantee that the interaction term does not turn into a proxy for either FDI or any financial indicator.

To check for robustness in model (3), domestic investments will also be included in the specifications afterwards. The reason for applying this methodology lies in the argumentation by Alfaro et al. (2004), where they suggested that by including domestic investments in the model will ensure that the impact of FDI will not be overestimated- given the highly significant correlation between FDI and domestic investments. Finally, the specifications could be entailing an endogeneity problem, since FDI and financial markets could cause higher economic growth, while higher economic growth could also trigger higher FDI inflows and the development of a financial market. By not controlling for this, the impacts of FDI, financial markets as well as their combined effect will be overestimated, because of the applied methodology of using the average GDP per capita growth. Therefore, an instrumental variable approach will be performed, as to address the endogeneity problem in our models. We plan to use lagged FDI values as an instrument to control for any endogeneity issues.

## 4. Results

This section covers the results of our models. We start by looking at the direct impact of FDI on growth, after which we study the link between FDI, financial markets and growth. Our analysis will focus on our unbalanced dataset. After this, we will address the results of our models estimated on our balanced dataset.

### 4.1 Direct impact of FDI

Table 3 shows the results on the link between FDI and economic growth. Our models are based on a standard OLS estimation. As the results of model 1 indicate, FDI does not have a significant and direct impact on growth. However, inflation rates and trade openness of a country significantly affect the

average long run growth rate. These variables also show the expected sign. By expanding model 1 by including some additional control variables, we obtain our second model. The results indicate that, even when controlling for several other factors affecting economic growth, FDI still does not appear to have a significant impact on growth. In addition to all the factors in model 2, model 3 also contains a Sub Saharan and a Latin American dummy. The reason for adding these dummies have been thoroughly discussed in the previous section. Nevertheless, the results indicate that FDI still has no significant direct impact on long term growth rates. Similar results have been obtained by Samad (2009), which documented that FDI had no direct and significant impact on growth by using Granger causality test, Co-integration techniques as well as an Error Correction Model approach. Model 3 will be used as our benchmark model when assessing the link between FDI and growth. However, to check our models for robustness, model 4 contains data on domestic investment rates. Domestic investments proved to be positively and significantly affecting growth, whereas the direct impact of FDI still does not appear to be significant. Models 1 through 4 all contain all the countries for which data was available and over the period 1980-2010. The control variables all appear to have the expected sign. As suggested by table 3 on average, FDI does not appear to have a direct and significant impact on growth. FDI could be affecting growth in combination with other factors, such as financial development.

## Table 3: The effect of FDI on growth

Determinants on average annual real per capita growth rate				
	1	2	3	4
Constant	1.354***	3.050***	3.329***	0.536
GDP	0.000	-0.001***	-0.000***	-0.001
FDI	0.006	0.005	0.006	0.009
Inflation	-0.003***	-0.003***	-0.002**	-0.001
Trade	0.004**	0.009***	0.008**	0.003
Population		-0.780***	-0.606***	-0.594***
Government		-0.033	-0.033	-0.057*
Education		0.136	0.187	-0.142
SSA dummy			-1.031**	-0.316
L.A dummy			-0.636**	-0.487
Investments				0.162***
Period	1980-2010	1980-2010	1980-2010	1980-2010
# of observations	103	103	103	103
R- Squared	0.1505	0.3209	0.3733	0.5306

FDI, Inflation, Trade, Population, Government and Investments are measured in percentages, while GDP is measured in constant 2000 US dollar. Education is measured as the average years of schooling obtained, whilst SSA and LA dummy denotes Sub Saharan African and Latin American dummy respectively.

### 4.2 Impact of FDI and FINANCE on growth: Unbalanced dataset

After analyzing the direct impact of FDI on growth, we have introduced several models to capture the role of a country's financial market. This section covers the impact of FDI and financial markets on growth. The results of our models are shown in table 4. The main explanatory variables in model 1 are FDI and *Finance*, which represents the overall size of the credit market. Due to limitations in the availability of data, this model contains 84 observations and covers the period 1985 to 2008. The results indicate that neither liquidity of the credit market, nor the net inflow of FDI have a significant impact on growth. However, initial GDP per capita, trade openness, population growth and government consumption appears to have the expected impact on growth. Model 2 assesses the impact of FDI, while taking the role of a country's credit market into account- themain variable in this

model is the *CCBA*. This model contains considerably less observations compared to model 1, but this can be explained by the availability of data. The results of model 2 show that *CCBA*, which denotes the degree to which commercial banks allocate society's savings, and *FDI* have no significant impact of economic growth. The majority of our control variables appear to have a significant impact on growth, while also having the expected sign. Moreover, we test the link between *FDI*, *PVCR* and growth in model 3. As the results of model 3 indicate, the amount of private credit available- *PVCR*- has a significant and positive impact on growth. This is in line with the argument that higher levels of private credit, translates into more investment. These investments contribute to capital accumulation in the economy, which will trigger growth. However, the impact of *FDI* is still not significant in model 3. In addition, model 4 studies the impact of the availability of credit by commercial banks- *CBCBD*- and *FDI* on growth. The results indicate that neither the variable *CBCBD*, nor *FDI* have a significant impact on growth. This is not what we have expected, since higher credit availability of commercial banks supposedly facilitates investments.

Model 5 and 6 analyzes the link between the working of the stock market, *FDI* and growth. The results of model 5, which are also presented in table 4, suggest that the value of all stocks traded have a positive impact on growth. Model 5 covers a total of 50 observations. The results indicate that the relative size of a stock markets triggers economic growth, after taking other factors into account. Finally, table 4 also provides the results of model 6, which analyze the impact of the liquidity of a stock market relative to its size and *FDI* on growth. Once more, stock market has proven to have a significant and positive impact on growth. Stock market limits liquidity problems in an economy, leading to more transactions and growth. Many investments represent long term commitment or resources, which investors are not always willing to engage into. Liquid stock markets offers investors the opportunity in engage in short term investments, while offering firms a constant pool of which to extract equity. Short term investment opportunities are also less risky than long term opportunities, so liquid stock markets also decreases investment risks. Our findings contribute to the literature

suggesting that a well-developed equity market increases trigger growth. However, FDI inflow did not have any significant impact on growth, neither in model 5 nor model 6. Models 1 through 6 suggest that, while results relating to the workings of the stock market appear to have a significant impact on economic development, the variables relating to the working of the credit market do not provide any positive results- with the exception of *PVCR*. The control variable trade openness however, constantly proved to have a significant effect on growth. Our results are in line with the findings of Sachs and Warner (1995) and Dollar and Kraay (2002), where they documented that openness to trade also contributes to economic development.

## Table 4: The effects FDI and *FINANCE* on growth

Determinants on average annual real per capita growth rate- FDI and <i>FINANCE</i> - over the period 1985-2008						
	<i>LIQL (1)</i>	<i>CCBA(2)</i>	<i>PVCR (3)</i>	<i>CBCBD (4)</i>	<i>STVT (5)</i>	<i>STURN (6)</i>
Constant	2.465**	5.866***	1,625	3.624***	2.55**	2.462*
GDP	-0.000**	-0.000***	-0.000***	-0.000**	-0.000***	-0.000***
FDI	0,001	0,004	0,007	0,002	0,011	0,012
Finance	1,276	-1,409	1.866*	-0,628	2.109*	3.294***
Inflation	-0,001	-0.002**	-0,001	-0,001	-0,001	-0,001
Trade	0.006*	0.010**	0.005*	0.008**	0.006*	0.006*
Population	-0.419**	-0.752**	-0.406**	-0.587***	-0.487*	-0,305
Government	-0.066*	-0,026	-0,020	-0,042	-0,003	-0,052
Education	0,326	-0,705	0,393	0,199	0,306	0,166
SSA dummy	-0.804*	-1.367*	-0,577	-1.018**	-1.138*	-1.344*
L.A dummy	-0.945**	-1.500**	-0.742*	-1.062**	-0,887	-0,953
# of observations	84	59	90	98	50	56
R- Squared	0,3326	0,4270	0,3455	0,2983	0,5058	0,5274

Table 4 shows the results of our estimations based on our unbalanced dataset. For definition of the variables, see note to table 3. The variable analyzing the impact of financial market on growth changes with each model. The financial variables, denoted as *FINANCE*, are logarithms all the values obtained from the World Bank Financial Structure. All of the estimations cover the period 1985 to 2008, however, the number of observations vary across the models.\*\*\*, \*\* and \* indicate significance levels at 1%, 5 % and 10%, respectively.

### *Combined impact of FDI and Finance on growth*

We now consider the combined impact of FDI and *FINANCE* on growth for all the variables relating to the working of the financial market. The results are presented in table 5, and are based on the same sample as the previous analysis. Models 1 and 2 test the relationship between FDI and financial markets and growth. Model 1 studies the impact of the combined impact of FDI and credit market liquidity, denoted as (FDI\**FINANCE*), and suggest that this relationship is not significant. The same conclusion was reached after looking at the results of model 2, which suggest that the combined impact of FDI and the degree to which commercial banks allocate society's savings, is not significant at none of our usual confidence levels. The majority of the control variables has a significant impact on growth and has the expected sign. Even though results of model 3 suggest that *PVCR* positively affect growth, the combined impact of FDI and *PVCR* does not have an impact on growth. Looking at the results of model 4, a similar pattern emerges as the one in model 1 and model 2, suggesting that commercial banks' credit does not affect growth. None of our main variables, FDI, *FINANCE* and (FDI\**FINANCE*), has proven to significantly affect growth in model 1, 2 nor 4. One reason why FDI has not shown any significant impact on growth might be the fact we do not account for the quality of institutions. Once again, the results suggest that only the total amount of private capital available in the stock market contributes to growth.

Table 5 also provides the results for the combined impact of FDI and variables describing the working of the stock market, on growth. The results of model 5 suggest that *STVT* positively affect growth, even though the combined impact of (FDI \* *STVT*) has no significant impact on growth. Similar results are presented by the results of model 6, where the stock market turnover ratio- *STURN*- appeared to positively affect growth. Theories such as the Efficient Market Hypothesis (EMH), suggest that well-developed stock markets are efficient and that they reflect all available information in the stock prices. Avoiding mispricing in stock markets should promote growth, as this would also limit risks. As indicated, lower risks leads to more investments, which ultimately triggers economic development.

For consistency reasons, domestic investment rates will be included in model 1 through 6 as to check the robustness of the results. Models 1 through 6 have been re-estimated to test the impact of FDI and *FINANCE* on growth, by also including domestic investment rates in our models. Our results are reported in the Appendix. When looking at the results of the impact of the workings of the credit market on growth, the results indicate that credit market do not significantly affect growth. Our results suggest that after controlling for domestic investment rates, the impact of the total amount of private credit on growth is no longer significant. Looking at the results of models 5B and 6B, our models suggest that after controlling for domestic investments, stock market turnover ratio is still significant- albeit not at the 1% confidence level. Our results also suggest that after controlling for domestic investments, the total value of the stocks traded has no longer an impact on growth. The impact of stock market turnover ratio should be relatively large compared to the stock market traded value, since the turnover ratio eliminates any expected effects in prices. Strangely, after controlling for domestic investments and stock market characteristics, our models suggest that FDI significantly affect economic growth. One plausible explanation could be that FDI complements domestic investments rather than crowd it out. This would mean that in addition to overcome the lack of capital needed, FDI also trigger growth through its complementary relationship with domestic investments. However, a more detailed analysis of this link is needed to be able to empirically document this, as the study of Tang et al. (2008) suggest.

When comparing our main findings with those documented by Alfaro et al. (2004), we report that while they suggest that the credit and the stock market affect growth, we have not been able to document this. This discrepancy could be caused by the difference between our control variables, since they have also controlled for the Black Market Premium (BMP) and institutional quality in their models, while we did not include these in ours.



## Table 5: The effects of (FDI\**FINANCE*) on growth

Determinants on average annual real per capita growth rate- (FDI * <i>FINANCE</i> ) over the period 1985-2008								
	<i>LIQL</i> (1)	<i>CCBA</i> (2)	<i>PVCR</i> (3)	<i>CBCBD</i> (4)	<i>STVT</i> (5)	<i>STURN</i> (6)	<i>STVT</i> (5B)	<i>STURN</i> (6B)
Constant	2.458**	5.909**	1,557	3.891***	2.193*	2.627*	-2,770	-2,667
GDP	-0.000**	-0.000**	-0.000***	-.001**	-0.001***	-0.001***	-0.000*	0,000
FDI	0,018	-0,031	0,138	-0,037	0,011	0,012	0.012*	0.012*
Finance	1,328	-1,528	2.699**	-0,981	2.944**	3.081***	0,766	1.879**
(FDI*Finance)	-0,015	0,062	-0,213	0,141	-0,256	0,124	0,202	0,200
Inflation	-0,001	-0.002**	-0,001	-0,001	-0,001	-0,001	0,000	0,000
Trade	0,006	0.010**	0,005	0,007	0.011*	0,005	-0,004	0,000
Population	-0.415**	-0.749**	-0.368*	-0.581***	-0.481*	-0,294	-0,170	-0,010
Government	-0.067*	-0,025	-0,040	-0,044	-0,010	-0,055	-0,003	-0,025
Education	0,324	-0,703	0,364	0,185	0,326	0,149	0,317	0,230
SSA dummy	-0.802*	-1,368	-0,567	-1.001**	-1.166*	-1.310*	-0,312	-0,340
L.A dummy	-0.948**	-1,495	-0.827*	-1.076**	-0,766	-0,994	-0.827*	-0,661
Investments							0.223***	0.198***
# of observations	84	59	90	98	50	56	50	56
R- Squared	0,3327	0,4270	0,3576	0,3008	0,5184	0,5288	0,7133	0,7104

Table 5 shows the results of our estimations. For definitions of these variables, see note to table 3. Also, \*\*\*, \*\* and \* indicate significance levels at 1%, 5 % and 10%, respectively.

### 4.3 Impact of FDI and FINANCE on growth: Balanced dataset

The previous section covered the impact of FDI, *FINANCE* and their combined impact on growth based on an unbalanced dataset. This section replicates the previous analysis by using a balanced dataset. Throughout our analysis, the dataset relating to the workings of the credit market contains 47 countries, whereas the sample containing variables regarding the working of the stock market contains 49 observations. The analysis period remained the same as in the previous section. We test our models on a balanced dataset as to control for any mis-estimation in our dataset. Our results should be viewed as a robustness check.

The results of our analysis are presented in table 6. Models 1 through 4 analyze the impact of the workings of the credit market on growth, while model 5 and 6 focuses on the impact of the working of the stock market on growth. Models 1 through 4 suggest that credit market liquidity, the degree to which commercial banks allocate society's savings, private credit and commercial banks' credit, denoted as *LLQ*, *CCBA*, *PVCR* and *CBCD* respectively, do not significantly affect economic growth. Although most of the control variables are significant and have the expected sign, our main variables do not appear to have a significant contribution to economic development. The main difference between these results and the previous results is that *PVCR* is no longer significant; suggesting that private credit no longer affects growth. One reason why credit market has no impact on growth could be that we have tested this link on considerably less observations. However, this also suggests that our models are based on higher quality data.

In addition, we also test for the impact of the total value traded in the stocks market and the stock market's turnover ratio on growth. The results are reported in table 6 as models 5 and 6 respectively. The impact of a stock market's turnover ratio on growth is highly significant, and the impact of the turnover ratio is larger than the impact of the total value traded. Also, several control variables have proven to have a significant impact on economic growth, as well as showing the expected sign.

## Table 6: The effects of FDI and *FINANCE* on growth

Determinants on average annual real per capita growth rate- FDI and <i>FINANC</i> - over the period 1985-2008						
	<i>LIQL (1)</i>	<i>CCBA(2)</i>	<i>PVCR (3)</i>	<i>CBCBD (4)</i>	<i>STVT (5)</i>	<i>STURN (6)</i>
Constant	5.489***	5.406***	3.960**	3.635*	3.364***	2.515**
GDP	0,000	0,000	0,000	0,000	-0.001***	-0,001
FDI	0,008	0,002	0,004	0,007	0,010	0,008
Finance	-1,780	-1,269	1,607	1,605	2.249**	2.257***
Inflation	0,018	0,019	0,024	0,029	-0,001	0,000
Trade	0.008*	0.007*	0,006	0,007	0.005*	0.008***
Population	-0.662**	-0.555*	-0,487	-0.534*	-0.472**	-0.410*
Government	-0.130**	0.109*	-0.104*	-0.114*	-0,047	-0,044
Education	-0,274	-0,422	-0,309	-0,347	0,176	0,202
SSA dummy	-1.368**	-1.266**	-1.114*	-1.333**	-1.838***	-1.442**
L.A dummy	-1.975***	-1.767**	-1.619**	-1.961***	-1.107**	-0.941*
# of observations	47	47	47	47	49	49
R- Squared	0,4289	0,4310	0,4300	0,4361	0,6386	0,6562

Table 6 shows the results of our estimations based on our balanced dataset and covers the period 1985 to 2008. For definition of the variables, see note to table 3. \*\*\*, \*\* and \* indicate significance levels at 1%, 5 % and 10%, respectively.

### *Combined impact of FDI and Finance on growth*

This section covers the combined impact of FDI and *FINANCE* on economic development. Table 7 presents the results of our analysis. Our analysis is based on the same balanced dataset as in the previous section. This section performs a two-layer robustness check, in order to assess the validity of our results. The first layer is represented by the dataset itself, since we re-estimate our models on a balanced dataset. By controlling our estimations for domestic investments, the second layer of our robustness check has been executed.

Model 1 suggests that the overall size of the credit market, denoted as *LIQL*, and net FDI inflow has no significant impact on growth. Moreover, the combined contribution of FDI and *LIQL* on growth did not appear to be significant. The results of model 2 however, suggest that the degree to which commercial banks allocate society's savings- *CCBA*- negatively affected growth. This is quite puzzling, since it suggests that inefficient credit market promotes growth: if well-developed credit market constrains growth, the opposite must also hold. However, a robustness check will be performed as to assess the validity of the impact of *CCBA* on growth. Moreover, model 3 analyzes the impact of *PVCR* and FDI on growth, and our results suggest that private credit does not affect growth. Model 4 tests if commercial banks' credit has an impact on growth. Our results suggest that commercial banks' credit have no significant impact on growth.

Figure 7 also reports the results of our models analyzing the impact of stock market on growth. Our main variables in model 5 and 6 are *STVT* and *STURN* respectively. The results suggest that the size of the stock market as well as its turnover ratio positively affect growth- these results are highly significant. In addition, the bulk of our control variables are significant and have the expected sign. These results are similar as the results in our previous models.

After testing for the impact of *FINANCE* and FDI on growth, we re-estimate our models after including domestic investment rates. By re-estimating our models, using data from domestic

investment rates, the second layer of our robustness check has been performed. This analysis is mainly to perform a robustness check with domestic investment rates to assess the validity of the impact of *CCBA* on growth. The results indicate that when controlling for domestic investments, *CCBA* no longer has a significant negative impact on growth. These results are reported in the Appendix. Our results relating to the impact of FDI on growth, when accounting for the impact of domestic investments are robust. Once again, as suggested by table 7, FDI positively affects growth, after the impact of domestic investments on growth has also been taken into account.

## Table 7: The effects of (FDI\**FINANCE*) on growth

Determinants on average annual real per capita growth rate- (FDI * <i>FINANCE</i> ) over the period 1985-2008								
	<i>LIQL (1)</i>	<i>CCBA(2)</i>	<i>PVCR (3)</i>	<i>CBCBD (4)</i>	<i>STVT (5)</i>	<i>STURN (6)</i>	<i>STVT (5B)</i>	<i>STURN (6B)</i>
Constant	5.522***	6.437***	3.972**	3.970**	2.971***	2.128**	-1,042	-1,391
GDP	0,000	0,000	0,000	0,000	-0.001***	-0.001***	-0.000**	-0.000**
FDI	0,046	-0,754	0,023	-0,046	0,011	0,008	0.011**	0.010*
Finance	-1,693	-3.545*	1,699	1,149	3.183***	2.664***	1,458	1,319
FDI * Finance	-0,035	1,340	-0,031	0,193	-0,285	-0,292	0,069	0,167
Inflation	0,017	0,030	0,024	0,027	-0,001	-0,001	0,000	0,000
Trade	0,007	0,006	0,006	0,004	0.010**	0.012**	-0,001	0,001
Population	-0.662**	-0.516*	-0,486	-0.533*	-0.465**	-0.405*	-0,237	-0,196
Government	-0.134**	-0.108*	-0,106	-0.119**	-0,055	-0,039	-0,034	-0,037
Education	-0,272	-0,410	-0,315	-0,300	0,197	0,225	0,238	0,257
SSA dummy	-1.3572*	-1.177*	-1.113*	-1.270*	-1.876***	-1.527***	-0.973*	-0,699
L.A dummy	-1.986***	-1.868***	-1.628**	-1.947*	-0.974**	-0.845*	-0.943**	-0,882
Investments							0.167***	0.163***
# of observations	47	47	47	47	49	49	49	49
R- Squared	0,4296	0,4678	0,4301	0,4418	0,6555	0,6644	0,7542	0,7590

Table 7 shows the results of our estimations, which covered the period 1985 to 2008. For definitions of these variables, see note to table 3. Also, \*\*\*, \*\* and \* indicate significance levels at 1%, 5 % and 10%, respectively.

#### 4.4 Addressing endogeneity

As previously mentioned, our models could be biased, since both financial market development and FDI tend to increase with higher growth. By constructing instruments for FDI we correct our estimations for this. For FDI data, we use 1 period lagged value on growth, since Wheeler and Mody (1992) suggest that current FDI stock also significantly impact the actual investment choices. Therefore, FDI values of 1979 were used in our models in table 8.

Our results show that, when introducing 1 period lagged FDI values in our models, stock market capitalization has no longer a significant impact on growth. This means that the size of a country's stock market does not contribute to economic growth. Large stock markets do not necessarily mean that the stock market is liquid: if investors cannot buy nor sell shares quickly, the stock market is not efficient. If investors are not able to quickly and efficiently reallocate their resources, they will forego profitable investment opportunities. By not being able to take advantage of investment opportunities, due to liquidity constraints, these investors are not contributing to economic development. However, our results suggest that the turnover ratio of a country's stock market positively affect growth. Throughout our analysis, the impact of stock market turnover has been fairly robust. Stock market turnover ratio indicates the liquidity, and efficiency, of the stock market. Liquid stock markets make it possible for investors to quickly reallocate their resources where these have the biggest impact. Liquid stock markets also increase investors' trust into the stock market, since they know that they can enter and exit the stock market at will. Liquid stock market provides potential investors with short term investment opportunities, which may be a crucial factor for investors to actively participate in the stock market. Moreover, liquid stock markets also trigger growth through the so-called multiplier effect. Higher turnover ratio also contributes to a higher velocity of money; which in turn will lead to more economic activity and economic growth.

Table 8: The effects of (FDI\**FINANCE*) on growth: IV test

Determinants on average annual real per capita growth rate- (FDI * <i>FINANCE</i> )- over 1985-2010				
	<i>STVT (5)</i>	<i>STURN (6)</i>	<i>STVT (5)</i>	<i>STURN (6)</i>
Constant	4.111***	3.465***	4.191***	3.43***
GDP	-0.000*	-0.000**	-0.000*	-0.000**
FDI	0,002	0,015	-0,029	0,023
Finance	1,378	1.969**	1,218	2.017**
FDI * Finance			0,090	-0,034
Inflation	-0.001*	-0.001*	-0.001*	-0.001*
Trade	0.006**	0.008***	0.006**	0.008***
Population	-0,379	-0,364	-0,364	-0,367
Government	-0.099**	-0.090**	0.101**	-0.090**
Education	0,080	0,044	0,061	0,052
SSA dummy	-1.107*	-0,746	-1.134*	-0,738
L.A dummy	-1.465***	-1.222**	-1.501***	-1.213**
# of observations	40	40	40	40
R- Squared	0,6408	0,6785	0,6417	0,6786

Table 8 shows the results of our estimations, which covered the period 1985 to 2008. FDI values of 1979 were used as an instrument to control for endogeneity. For definitions of these variables, see note to table 3. Also, \*\*\*, \*\* and \* indicate significance levels at 1%, 5 % and 10%, respectively.



## 4.5 Limitations

Although our analysis tried to extensively analyze the link between FDI and financial development on growth, some limitations have been identified during the process. Throughout our analysis, the quality of institutions was not controlled for. Theoretically, proper institutions should be in place for FDI to positively affect economic development. Proper institutions would reduce fraud, as well as inefficiency. Further research could control for this, by using data measuring the institutional quality of countries.

Our analysis did not distinguish between developed and developing countries, neither did we focus on the impact of *FINANCE* on growth, within countries. It could be the case the upper income countries' financial markets impact on growth differs significantly from the lower income countries. In addition, we found no evidence on the impact of human capital on growth, as has been suggested in the literature. One plausible explanation could be the variable we have used to proxy human capital. Our analysis was based on the average years of schooling, while some studies use the percentage of the population over the age of 25 years who completed secondary education. The average years of schooling only indicates the quantity of education a person has received, without taking any other factors into consideration. Finally, our results suggest that FDI positively affect economic growth only when controlling for domestic investments' impact on growth, suggesting that a complementary relationship between FDI and domestic investments may exist. However, by following a multivariate approach, future research can study this link.

## 4.6 Recommendations

If the stock markets affect economic growth as our results suggest, policy makers should take this into serious consideration. Logically, institutional and regulatory concerns play a major role in the development of stock markets. Especially emerging economies should carefully review their stock market development. One of the issues they should focus on is the degree of openness of their stock

market. The degree of openness is important, since open stock markets helps align domestic and foreign financial markets. Liberalization of financial markets could be achieved through the elimination of capital flow barriers. International capital flows can positively affect the working of domestic stock markets since domestic firms are able to seek investment from abroad. In order to achieve this, domestic firms will have to provide proper and well-defined information. In addition, countries should also focus on the regulatory framework in which the stock market operates. Proper regulations should ensure competitive pricing among and across markets. Some necessary requisites to maintain investor's confidence are the implementation of standards ensuring the protection of investors, as well as full disclosure of reliable information.

It should be clear that none of the developed countries have invented a perfect and efficient stock market overnight. Stock market developments should be under constant review as to ensure that regulations are updated when needed. Even in the most advanced economies, stock market developments are constantly under supervision, since policy makers should be able to act on all the innovations in the stock market. Innovations entail the offering of new products and services and alternative methods of conducting business and investing procedures. Without the proper regulations and institutions, domestic stock markets will not link well with international financial markets, since international investors lack the trust needed to commit their resources to the emerging economy. Proper regulation covers standard accounting, legal, and tax systems as well as supervising systems to ensure the compliance of these standards. However, as the recent financial crisis has showed us, even in the presence of proper regulations, financial crisis can occur.

## 5. Conclusion

Financial markets have developed throughout the years and have been playing a major role in a country's development. Financial markets are nowadays more intertwined than ever, as the recent

financial crisis has thought us. In addition, the impact of foreign direct investment has been a hot topic in the literature, since theory predicts FDI to exert economic growth. Several authors have argued that FDI triggers growth by increasing a country's technology level, by supplying the much needed capital for developing countries and by enlarging the domestic market. In light of these theoretical implications of FDI inflow, several countries have implemented special policies offering financial incentives to foreign firms. This paper analyzed the impact of FDI and financial market performance on economic growth. Our analysis covered the period 1985 to 2008 and our dataset contained all the countries for which data was available. Our models were estimated based on two different datasets: an unbalanced and a balanced dataset. By using several variables relating to the workings of the credit and the stock market, the link between these and growth has been analyzed. The variables relating to the workings of the credit markets are *Liquid liabilities of the financial market divided by GDP*, *Commercial Banks assets over Commercial Banks' and Central Bank's Assets*, *Private Credit by Deposit Money Banks and Other Financial Institutions over GDP*, and *Commercial Banks' Credit over Commercial Banks' Deposits*, while variables relating to the workings of the stock markets were *Stock Market Total Value Traded over GDP*, and *Stock Market Turnover Ratio*.

Our results indicate that even though the combined impact of FDI and financial markets has not proven to be significant, some aspects of the financial market significantly affect growth. *Private Credit by Deposit Money Banks and Other Financial Institutions over GDP* has a positive impact of growth. However, our results were not robust after controlling for domestic investment rates. Moreover, neither of the other variables analyzing the working of the credit market has proven to significantly affect growth. On the other hand, our results suggest that a well-developed stock market contributes to economic development- even after controlling for domestic investments. Our results suggest that the size of the stock market is not significantly linked with economic growth. Similar results have been documented by Levine and Zervos (1998). In the presence of illiquid stock markets, investors will forego profitable investments, because of the higher risks involved. In

addition, well-developed stock markets signals trust to investors, which is crucial for the working of a stock market. Our results suggest that the absence of an efficient and liquid stock market, limits a country to achieve economic development. Countries should continuously review the development of their financial market and implement standards in order to promote fair and full disclosure. However, since there is room for further research, the findings provided above should not be viewed as definitive answers to these complex relationships.

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## 7. Appendix

### 7.1 List of countries

Dataset Unbalanced: FDI and <i>FINANCE</i> on growth					
Algeria	Congo, Dem. Rep.	Hong Kong SAR, China	Malta	Senegal	Venezuela, RB
Argentina	Congo, Rep.	Hungary	Mauritania	Singapore	Zambia
Australia	Costa Rica	Iceland	Mauritius	South Africa	Zimbabwe
Austria	Cote d'Ivoire	India	Mexico	Spain	
Bahrain	Cyprus	Indonesia	Morocco	Sri Lanka	
Bangladesh	Denmark	Iran, Islamic Rep.	Mozambique	Sudan	
Barbados	Dominican Republic	Ireland	Nepal	Swaziland	
Belgium	Ecuador	Israel	Netherlands	Sweden	
Belize	Egypt, Arab Rep.	Italy	New Zealand	Switzerland	
Bolivia	El Salvador	Jamaica	Niger	Syrian Arab Republic	
Botswana	Fiji	Japan	Norway	Thailand	
Brazil	Finland	Jordan	Pakistan	Togo	
Brunei Darussalam	France	Kenya	Panama	Tonga	
Bulgaria	Gabon	Korea, Rep.	Papua New Guinea	Trinidad and Tobago	
Burundi	Gambia, The	Lesotho	Paraguay	Tunisia	
Cameroon	Germany	Luxembourg	Peru	Turkey	
Canada	Ghana	Macao SAR, China	Philippines	Uganda	
Central African Republic	Greece	Malawi	Portugal	United Kingdom	
China	Guatemala	Malaysia	Rwanda	United States	
Colombia	Honduras	Mali	Saudi Arabia	Uruguay	

Dataset Balanced: FDI and <i>FINANCE</i> on growth					
Credit market			Stock market		
Austria	India	South Africa	Argentina	Italy	Singapore
Bahrain	Indonesia	Spain	Australia	Jamaica	South Africa
Bangladesh	Iran, Islamic Rep.	Swaziland	Austria	Japan	Spain
Barbados	Jamaica	Switzerland	Belgium	Jordan	Sri Lanka
Belgium	Korea, Rep.	Syrian Arab Republic	Brazil	Kenya	Sweden
Burundi	Luxembourg	Trinidad and Tobago	Canada	Korea, Rep.	Thailand
Cameroon	Malawi	Turkey	Colombia	Luxembourg	Trinidad and Tobago
Cote d'Ivoire	Mauritania	Uganda	Cote d'Ivoire	Malaysia	Tunisia
Denmark	Mexico	Uruguay	Denmark	Mauritius	Turkey
Dominican Republic	Nepal	Venezuela, RB	Egypt, Arab Rep.	Mexico	United Kingdom
Ecuador	New Zealand	Zambia	Finland	Morocco	United States
Fiji	Niger		France	Netherlands	Venezuela, RB
France	Norway		Germany	New Zealand	Zimbabwe
Gabon	Pakistan		Greece	Norway	
Gambia, The	Philippines		Hong Kong SAR, China	Pakistan	
Greece	Rwanda		India	Peru	
Guatemala	Senegal		Indonesia	Philippines	
Iceland	Singapore		Israel	Portugal	



## 7.2 Robustness check of FDI and FINANCE on growth- Unbalanced dataset

Determinants on average annual real per capita growth rate- (FDI * FINANCE) over the period 1985-2008						
	LIQL (1B)	CCBA(2B)	PVCR (3B)	CBCBD (4B)	STVT (5B)	STURN (6B)
Constant	-0,057	3,004	-0,359	0,370	-2,770	-2,667
GDP	0,000	0,000	-0,000**	0,000	-0,000*	0,000
FDI	0,050	-0,476	0,043	-0,065	0,012*	0,012*
Finance	0,308	-2,126	1,659	-0,247	0,766	1,879**
(FDI*Finance)	-0,040	0,857	-0,057	0,254	0,202	0,200
Inflation	0,000	-0,001*	0,000	0,000	0,000	0,000
Trade	0,002	0,003	0,002	0,000	-0,004	0,000
Population	-0,412**	-0,707***	-0,359**	-0,417**	-0,170	-0,010
Government	-0,055	-0,081	-0,050	-0,072**	-0,003	-0,025
Education	0,140	-0,851	0,179	-0,146	0,317	0,230
SSA dummy	-0,318	-0,208	-0,146	-0,328	-0,312	-0,340
L.A dummy	-0,716*	-1,055*	-0,574	-0,746*	-0,827*	-0,661
Investments	0,138***	0,184***	0,123***	0,170***	0,223***	0,198***
# of observations	84	59	90	98	50	56
R- Squared	0,4450	0,6302	0,4882	0,5165	0,7133	0,7104

## 7.3 Robustness check of FDI and FINANCE on growth- Balanced dataset

Determinants on average annual real per capita growth rate- (FDI * FINANCE) over the period 1985-2008						
	LIQL (1B)	CCBA(2B)	PVCR (3B)	CBCBD (4B)	STVT (5B)	STURN (6B)
Constant	3,390	4,201*	2,152	2,082	-1,042	-1,391
GDP	0,000	0,000	0,000	0,000	-0,000**	-0,000**
FDI	0,093	-0,773	0,053	-0,062	0,011**	0,010*
Finance	-1,567	-3,268	1,348	0,796	1,458	1,319
(FDI*Finance)	-0,074	1,378	-0,075	0,257	0,069	0,167
Inflation	0,015	0,029	0,021	0,023	0,000	0,000
Trade	0,004	0,004	0,004	0,001	-0,001	0,001
Population	-0,646**	-0,509*	-0,502	-0,524*	-0,237	-0,196
Government	-0,117*	-0,089	-0,093	-0,100*	-0,034	-0,037
Education	-0,429	-0,524	-0,467	-0,433	0,238	0,257
SSA dummy	-0,867	-0,692	-0,674	-0,765	-0,973*	-0,699
L.A dummy	-1,692**	-1,580**	-1,397**	-1,618**	-0,943**	-0,882
Investments	0,100*	0,096*	0,095*	0,099*	0,167***	0,163***
# of observations	47	47	47	47	49	49
R- Squared	0,4887	0,5214	0,4842	0,4991	0,7542	0,759

## 7.4 Results of FDI and FINANCE on growth- IV test

Determinants on average annual real per capita growth rate- (FDI * FINANCE)						
	<i>LIQL (1)</i>	<i>CCBA(2)</i>	<i>PVCR (3)</i>	<i>CBCBD (4)</i>	<i>STVT (5)</i>	<i>STURN (6)</i>
Constant	4,000	4.941**	3,193	3,699	4.191***	3.43***
GDP	0,000	0,000	0,000	0,000	-0.000*	-0.000**
FDI	0,174	-0,290	0,189	0,067	-0,029	0,023
Finance	0,796	-2,085	3,293	1,190	1,218	2.017**
FDI * Finance	-0,148	0,641	-0,264	0,067	0,090	-0,034
Inflation	0,022	0,016	0,030	0,027	-0.001*	-0.001*
Trade	0,002	0,002	0,001	0,002	0.006**	0.008***
Population	-0,395	-0,307	-0,022	-0,434	-0,364	-0,367
Government	-0,173	-0,110	-0.174*	-0,148	0.101**	-0.090**
Education	0,068	-0,088	0,046	-0,082	0,061	0,052
SSA dummy	-1,055	-1.358*	-1,022	-1,263	-1.134*	-0,738
L.A dummy	-1.788**	-1.574**	-1.665**	-1.943**	-1.501***	-1.213**
# of observations	42	42	42	42	40	40
R- Squared	0,4116	0,4431	0,4416	0,4148	0,6417	0,6786