Master's Thesis

MSc Economics and Business – International Economics and Business Studies

South-South cooperation and economic development: the impact of foreign direct investment

An empirical analysis of the impact of FDI flows between developing countries: the case of Africa.

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Abstract

This paper uses FDI inflows from the OECD to distinguish between North-South and South-South investments. An empirical analysis of the case of Africa shows that both have growth-enhancing effects. Theory suggests that the impact from South-South FDI on economic growth may be larger than from North-South FDI since investors from the South are more familiar with local developing markets and business practices, which increases their productivity spillovers. Still the empirical analysis does not find convincing evidence for this hypothesis on the aggregate level.

JEL classification: E22, F21, F23, O16, O55

Keywords: Foreign direct investment, South-South cooperation, emerging economies, economic growth, Africa.

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1. Introduction

"South-South cooperation has the potential to balance growth and equity on a global scale. Even in the midst of severe economic, social and political instabilities, South-South cooperation has continued to drive buoyant trade and financial flows in recent years."

UN SECRETARY-GENERAL BAN KI-MOON, 2012 [1]

The global economic system finds itself in a transition phase after the 2007-08 financial crises and the subsequent economic crisis in Western economies. The economic setbacks in the recent years have shaken the Western economic system to its foundations and led to a widespread rethinking on the key aspects of advanced economies. At the same time emerging economies show that the crisis has a lower or at least a different impact on developing economies, indicating the increasing importance of an economic structure outside the traditional Western-dominated sphere. Countries like the so called BRICs (Brazil, Russian Federation, India and China) are home to vast growing multinational companies (MNCs), and in a world traditionally characterised by trade and investment flows between advanced countries (the global North) and from these countries to the less developed world (the global South), these MNCs give rise to new South-South flows and even a role-reversal in the form of South-North investments (The Economist, 2011). The increased self-consciousness and interconnectedness of developing countries is typified as *South-South cooperation*, indicating the exchange of resources, technology and knowledge between the economies of the global South. In addition to recent research on the magnitude and impact of South-South cooperation, this paper investigates the effects of FDI on the economic development of developing countries, with an empirical focus on South-South FDI flows to the African continent.

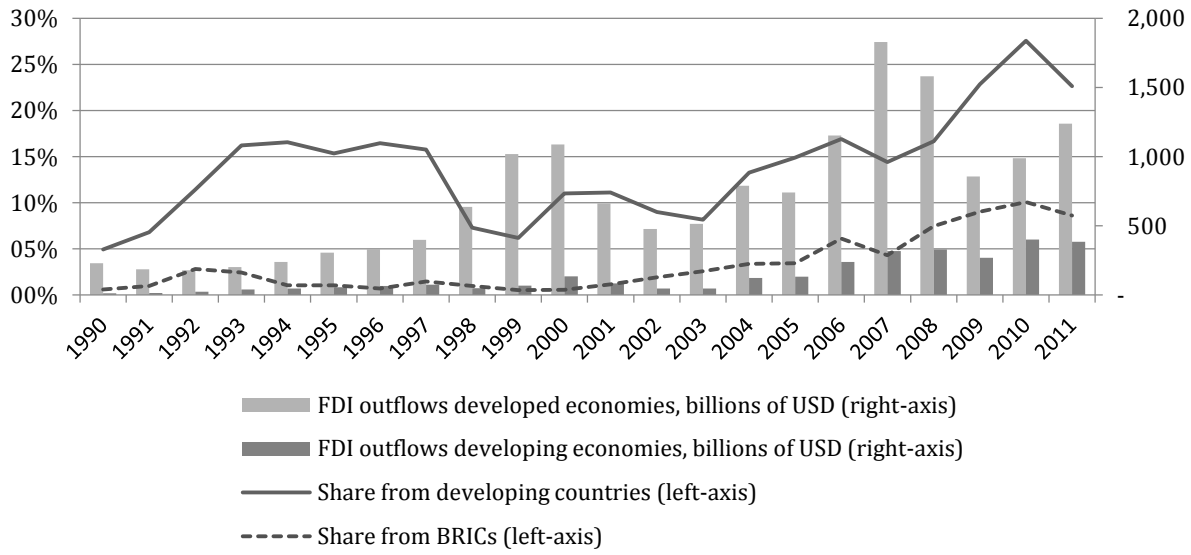
The last decade South-South cooperation in general and FDI in particular generated considerable interest. Aykut and Ratha (2004) gave research on South-South FDI flows an impulse by introducing estimations about the size and magnitude, which was and is difficult due to poor data availability and "round-tripping" of capital in the global South. This research showed that South-South investments significantly increased in the 1990s, and that it was less affected by the Asian crisis in 1997 compared to North-South FDI. An important factor in the rise of South-South FDI was the emerge of MNCs in developing countries as significant sources of outward FDI: since 2003 the growth rate of outward FDI from emerging economies, including the BRICs, has outpaced that from advanced economies (Aykut & Goldstein, 2007).

On aggregate FDI outflows from developing countries increased considerably during the last decades, growing from about $12 billion in 1990 to more than $400 billion in 2010, with China

[1] Message for the UN Day of South-South Cooperation, 12 September 2012

as the largest investor increasing from less than $1 billion to almost $70 billion in these years (see Figure 1.1). The BRIC-countries currently count for about 10 per cent of the global FDI outflows. These trends also show that FDI outflows from developing countries where much less affected by the 2007-08 crisis, hence significantly increasing their global share in outward FDI to more 28 per cent in 2010, compared with less than 5 per cent in 1990. Although advanced economies began to recover from the downturn and slowly retake their share, the importance of Southern investors is nowadays unquestionable.

Figure 1.1 - Global FDI outflows 1990-2011



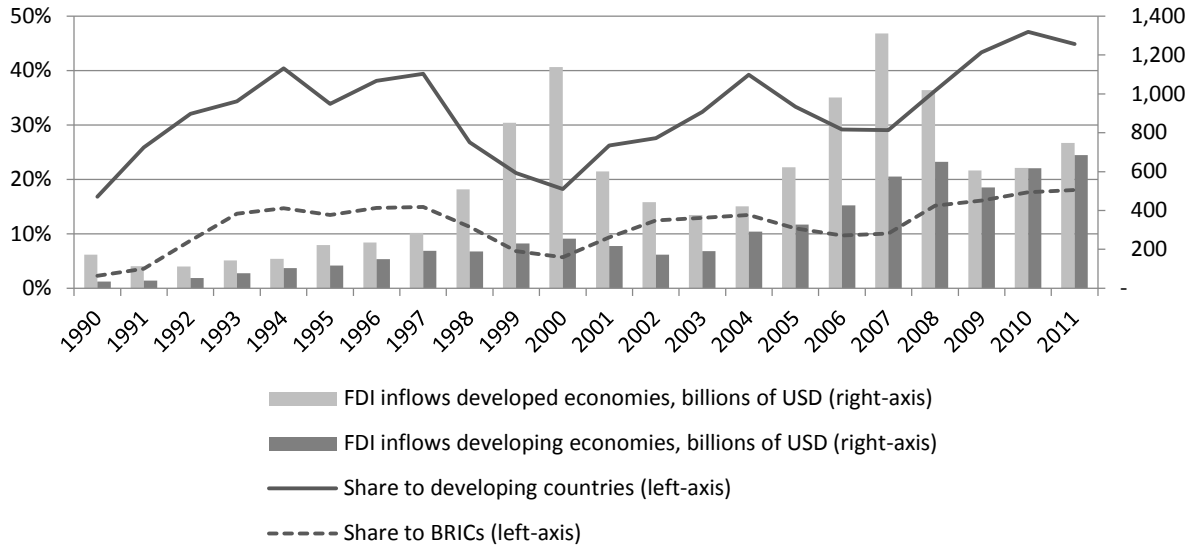
Data source: UNCTAD World Investment Report (2012).

The share in FDI inflows to developing countries, on the other hand, has been between 15 and 45 percent since the 1970s, but also these figures show that FDI flows to the South are less affected by economic crises in the industrialised world; on the contrary the share of developing economies increased when global FDI flows faced economic downturns (see Figure 1.2). Global FDI inflows surpassed the 2005-06 pre-crisis level in 2011, with developing and transition economies accounting for more than half of the global FDI (45 per cent and 6 per cent, respectively), while before 2008 this was less than one third (UNCTAD, 2012). Particularly investment liberalisation and increasing commodity prices boosted FDI flows to developing regions in Africa, Asia and Latin America.

This increase in investment flows from and towards developing countries in the global South indicates a "structural transformation of the global economy in which the world's economic centre of gravity has moved towards the East and South, from OECD members to emerging economies, a phenomenon [of] shifting wealth" (OECD, 2010, p. 15). FDI outflows from countries like China and India predominantly target other developing countries (80 per cent and 65 per

cent, respectively) and especially in Asia investment flows are mainly intraregional. Main drivers for South-South FDI are access to natural resources and energy (China) and the lack of domestic investment opportunities (Brazil) (OECD, 2010).

Figure 1.2 - Global FDI inflows 1990-2011



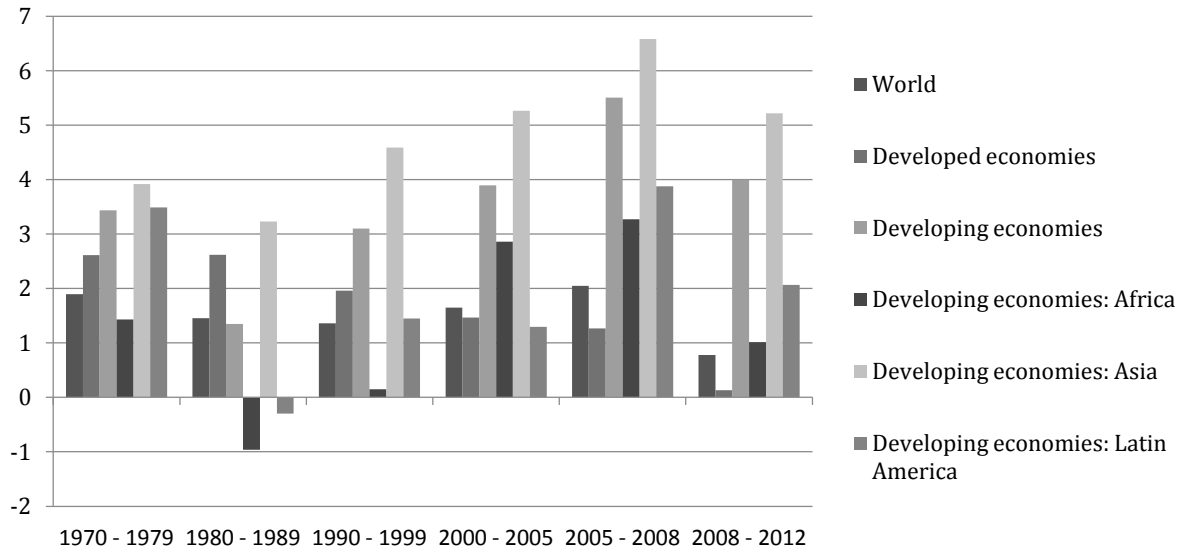
Data source: UNCTAD World Investment Report (2012).

South-South FDI has been rising, as firms from emerging markets, e.g. the BRICs and the East Asian tigers, have gone multinational. In particular when these investments complement North-South FDI, South-South cooperation may contribute to the development of low-income countries. Indeed, Southern MNCs tend to invest in countries with a similar or lower development level and are less driven by market size. Moreover investors from other developing countries may have comparative advantages due to familiarity with developing-market techniques and business practices. And finally South-South FDI offsets the decline in North-South FDI during the last years, reducing the volatility of investment flows to developing economies (Aykut & Goldstein, 2007).

However, the poverty-alleviating effects of FDI might be limited, because FDI benefits the skilled workers, worsening the relative income position of the poor (Nunnenkamp, 2004). Hence the question is whether South-South cooperation will attribute to a reduction in domestic inequality and further progress towards the Millennium Development Goals. But regarding economic growth, South-South cooperation is expected to become one of its main engines, accounting for 57 per cent of the world's GDP in 2030 (UN, 2011). Since the 1990s the growth-rates of developing countries have been consequently higher compared to developed countries, with the Asian tigers as the undisputed champions (see Figure 1.3). As for the trends of FDI flows, the different impact of the 2007-08 crisis for developed and developing countries is clearly visible:

although affected, developing countries' GDP have grown 4 per cent per year on average since 2008.

Figure 1.3 - Real GDP per capita growth rates 1970-2012



Data source: UNCTADstat. Geometric means of growth rates in % are based on constant 2005 U.S. dollars.

A substantial and growing amount of literature investigated the relationship between foreign direct investment and economic growth. The new endogenous growth models show that FDI contributes to long-term growth through the generation of increasing returns in production via externalities and productivity spillovers (de Mello, 1997). However, empirical research points out that a minimum level of development is needed for an economy to absorb the technological transfers through FDI (Borensztein, De Gregorio, & Lee, 1998). In addition many country characteristics play a role in determining the effects of FDI: the development of the financial system of the recipient country, institutional quality, trade policy regime, etcetera. In general the main drivers for FDI are market size, the level of real income, the availability of infrastructure, trade policies and political and macroeconomic stability (Blomström & Kokko, 2003), as well as the abundance of natural resources.

Literature on the specific case of South-South FDI stresses the different development of emerging-market MNCs compared to those from industrialised economies: the former internationalise not because of their firm specific advantages, but in order to build these advantages, e.g. proprietary technology and brands (Mathews, 2006). Furthermore empirical literature indicates the importance of regionalism of FDI flows from developing economies, and the importance of institutions and resource abundance, but remains inconclusive about the growth effects of South-South FDI and its complementarity or substitutability to North-South investment flows.

The purpose of this paper is to investigate the effects of South-South FDI in the case of Africa. The empirical analysis shows as its main result that FDI inflows either from the North or from the South have growth-enhancing effects, with a weak indication that the growth-effects from the latter may be larger. This is supported by theory that stresses the growth-potential of South-South FDI flows due to familiarity with developing markets and business practices, hence increasing the gains from spillovers. In this paper no significant results are found concerning the importance of absorption capability through sufficient schooling, or increasing growth effects through the natural resources-channel. Furthermore, an additional analysis on the relationship between North-South and South-South FDI inflows to Africa gives a weak but non-robust indication of a these flows being substitutes, and further empirical evidence of the importance of natural resources as pull factors of FDI flows to Africa.

The paper is divided into four sections: Section 2 presents the findings of the existing literature on the relationship between FDI and economic growth in general and South-South FDI in particular; Section 3 builds on the former by summarising the channels through which FDI affects growth; Section 4 describes the empirical models and the regression results for the case of Africa, and Section 5 presents some concluding remarks.

2. Literature review

Since the emerge of the new endogenous growth theory, FDI is generally thought to have a growth-enhancing effect, both directly and indirectly. However, the empirical evidence remains often inconclusive on the effects of FDI, and some also question the causality direction of the relationship between FDI and GDP. The focus of a main part of the literature nowadays is on the country characteristics which determine the attraction of FDI and its growth effects.

Focussing on the FDI flows between developing countries, South-South flows appear to enjoy increased attendance in the literature. The main findings include the different development of MNCs from developing countries compared to their advanced economies' counterparts, the competitive advantage of these new MNCs in developing-country markets due to familiarly with business practises and the challenging economic environment, and the more regional aspect of South-South FDI.

2.1 FDI and economic growth: a complicated relationship

Since the last decades a vast and growing amount of literature has investigated the relationship between foreign direct investment and economic growth. In the traditional neoclassical growth models FDI could only affect the level of income but not the long term growth rate. In the 1990s however, new endogenous growth models were introduced (e.g. Barro and Sala-i-Martin, 1995), in which it was shown that FDI indeed could affect economic growth through the generation of increasing returns in production, via externalities and productivity spillovers (de Mello, 1997). Amongst others, Barro and Lee (1994) found that the rate of investment has a significant positive growth effect, and this study would be followed by many more aggregate and country or sector specific empirical research.

2.1.1 The effect of FDI on growth and the importance of country characteristics

Although Barro and Lee (1994) indicated the positive effect of investments on economic growth, they already mentioned that this effect was weaker than expected, pointing out that investments in general and foreign direct investments in particular do not increase the growth rate of an economy unconditionally. Further research was needed to investigate how and when FDI would increase economic growth.

One of the channels through which FDI affects the host-economy is the channel of linkages. Rodríguez-Clare (1996) distinguishes forward and backward linkages: a multinational firm investing in a foreign country creates positive externalities to other firms through the increased demand for more specialised inputs (backward linkages), and through a more specialised output (forward linkages). Based on a theoretical model, he shows that a multinational's linkage effect is stronger when the costs of communication between the headquarters and the production plant

are high, since this provides an incentive to buy specialised inputs in the host-country. Moreover he indicates that the linkage coefficient is higher the more developed the host-country is.

Apart from linkages, FDI affects the host-economy in various ways. De Mello (1997) mentions factors such as encouragement to incorporate new inputs and technologies in the production function of the host-economy, as well as the augmentation of the existing stock of knowledge through labour training and skill acquisition and diffusion, and the introduction of alternative management practices and organisational arrangements. De Mello stresses the importance of a threshold of development, such as the institutional features and the absorptive capacity of the host-country. Finally he indicates that in theory technological laggards should gain more from FDI spillovers than leaders, and that the impact seems to depend inversely on the technological gap between leaders and followers.

Blomström and Kokko (1998) extent the concept of spillovers by applying it on both the home- and host-country of the investing multinational company. For the host-country, besides the productivity spillovers like linkages, imitation and skill acquisition, they mention the increase in competition and market access spillovers. For the home-country the investment activities of the multinational firm enables it to grow larger and hence benefit from economies of scale. Moreover the growth of a MNC is often accompanied by an increase in R&D in the home-country. Finally market access spillovers may also play a role in the home-country.

So far, on the one hand, the literature indicates that FDI can affect growth both directly and indirectly, but on the other hand that country specific factors are decisive whether FDI does so. By applying an endogenous growth model, Borensztein, De Gregorio and Lee (1998) state that technological progress is the key factor in determining growth rates, and hence in a model with technological diffusion, the economic growth rate depends on the extent of adoption and implementation of new technologies. This leads to their hypothesis that the contribution of FDI to growth through a technology transfer depends on the absorptive capability of the host-country. The most important factor determining the ability to absorb new technologies is the stock of human capital, since the application of more advanced technologies (originating from more advanced home-countries) requires a sufficient level of knowledge in the (developing) host-country. Based on their empirical results, Borensztein et al. (1998) then conclude that FDI, being an important vehicle for technology transfer, contributes more to growth than domestic investment, whereas the impact of FDI is enhanced by the interaction with the level of human capital in the host-country.

Since FDI affects growth through augmentation of the existing capital stock, it is also necessary to look to the interaction between FDI and its equivalent, domestic investments. Based on

empirical evidence from developed and developing countries, de Mello (1999) concludes that the extent to which FDI is growth-enhancing depends on the degree of complementarity and substitutability between FDI and DI for the host-country. Since the process of technological upgrading and knowledge spillovers will need a sufficient technical level of the domestic production, a substitutable relationship will create a larger growth effect. This indicates again that a technology gap between the home- and host-economy will reduce the growth effects of FDI. Hence developing countries will have a more complementary relationship between FDI and DI and a smaller growth effect. Besides, Feldstein (1995) argues that, for the home-country, FDI outflows should not have a substantial effect on the overall domestic investments, since they should result in an increase in capital inflows.

Concerning the complementary or substitutability of FDI and DI in the host-country, Markusen and Venables (1999) take it to the sector level, concluding that FDI affects domestic industries through two counter-forces: the competition effect, under which MNCs may substitute domestic final-goods production, and a backward linkage effect to intermediate-goods producers creating complementarities which could benefit domestic final-goods producers.

In addition to Blomström and Kokko (1998, 2003), during the last decade many research has been done on the effects and spillovers of FDI in the host-country, leading to the conclusion that for productivity-, wage- and export spillovers the empirics lead to mixed results due to country characteristics (Görg & Greenaway, 2004). Likewise, apart from growth, FDI may also affect the involvement of the host-country in the world trade system and FDI may impact consumers through lower prices and more varieties (Lipsey, 2004).

Many governments have realised that FDI may boost their economy and hence tried to attract foreign MNCs. In general the main drivers for FDI are market size, the level of real income, the availability of infrastructure, trade policies and political and macroeconomic stability (Blomström & Kokko, 2003), as well as the abundance of natural resources. Bengoa and Sanchez-Robles (2003) empirically show that FDI flows increase with economic freedom and liberalised markets, using the case of Latin America. In addition Campos and Kinoshita (2003) stress the importance of agglomeration economies, institutions, initial conditions and factor endowments in transition economies for attracting FDI.

Since both theory and empirics on aggregate levels – for both drivers and effects of FDI – repeatedly emphasize the importance of country characteristics, a growing amount of literature investigates the impact of FDI at a region or country level, mostly focussing on developing economies.

In general the empirics show positive growth effects in emerging economies in East Asia (Chen, Chen, & Ku, 2004), China and India (Agrawal & Khan, 2011) and Latin America (Bengoa & Sanchez-Robles, 2003), whereas the results in Africa are more ambiguous. Adams (2009) finds in the case of sub-Saharan Africa that FDI often crowds out the domestic investments. Moreover the impact of FDI on growth is frequently constrained by the host-country's lack of trained workforce, infrastructure, and depth and efficiency of the financial system. Hence in particular in Africa, basic conditions in order to be able to absorb FDI advantages are very important.

Concerning the financial system, earlier Hermes and Lensink (2003) investigated the importance of the development of the financial system of the recipient country. They also point out that financial development is an important precondition for FDI to have a positive impact on economic growth, and the above indicated difference between Asia, Latin America and Africa is supported by their findings that developing countries with sufficient financial development are mostly Asian and Latin American, while in this perspective in particular sub-Saharan Africa remains problematic. When including advanced economies as well, the factor of financial depth becomes even more manifest (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004).

Another important country characteristic influencing the effects of FDI on growth in a developing host-country is its trade policy regime. Balasubramanyam, Salisu and Sapsford (1996) show that export-promoting countries gain more from FDI than import substituting countries, when empirically testing the hypothesis that the beneficial effect of FDI, in terms of enhanced economic growth, is stronger in countries which pursue an outwardly oriented trade policy rather than in countries adopting an inwardly oriented policy. An interesting study concerning trade liberalisation is also that of Kobrin (2005), which indicates that more and more developing countries over the last decades liberalised their policy regimes towards foreign MNCs due to the belief in the growth effects of FDI (and not due to the pressure from outside by advanced economies or international organisations).

Finally, Nunnenkamp and Spatz (2004), by differentiating between resource-seeking, market-seeking and efficiency-seeking FDI on a sector level, find that the link between FDI and growth is stronger in the services sector than in the manufacturing sector in the case of developing countries. Moreover they find evidence of the importance of a relatively small technology gap between the home- and host-country, since this induces a stronger growth-enhancing effect of FDI.

2.1.2 The causality between FDI and growth questioned

So far all models focus on the impact of FDI on economic growth or, more precise, on the growth rate of GDP. However, more and more the question was raised whether this assumed relationship

goes always in this direction. When investigating the importance of liberalised trade regimes, education, export-orientation and macroeconomic stability, Zhang (2001) points out that theory proposes both growth-driven and growth-led FDI, indicating bidirectional causality. Hence empirical research also needs to take care of the causality question. Literature on this issue remains indecisive: Chowdhury and Mavrotas (2006) find sometimes bidirectional or reversed causality between FDI and GDP in the case of some East Asian economies, and emphasize the importance of country specific analysis as a basis for investment policies. Hansen and Rand (2006) in turn find that FDI is indeed growth-enhancing in a sample of developing countries, indicating that FDI causes long-run growth rather than the reverse.

2.2 South-South cooperation: the role and impact of FDI

Traditionally the research on international capital flows concentrated on flows between advanced economies and from those economies towards developing countries, for the simple reason that South-South FDI flows had no significant magnitude. This changed in the beginning of the 1990s, when advanced economies experienced an economic slowdown, while several developing countries increased their attractiveness as destination of FDI (Aykut & Ratha, 2004). So far FDI flows were predicted according to the investment development path (IDP) approach (Dunning, 1981), but first research on FDI outflows from less advanced economies gave indications that South-South FDI flows may develop according to different cycles.

2.2.1 Estimating the magnitude of South-South FDI flows

Aykut and Ratha (2004), using the classification of "North" and "South" to estimate the magnitude of South-South FDI flows, gave the impetus for an increasing amount of research on the development of South-South cooperation in the field of investments. Since especially in the case of developing countries, data on inflows tend to be more reliable than data on outflows – due to restrictions on the capital account or exchange controls, or preferential treatment for non-resident investment – Aykut and Ratha calculate the implied South-South FDI flows by subtracting the North-South FDI flows from the total FDI inflows to developing economies. Their research shows the increasing importance of South-South flows, both in absolute size and relative to flows from or within the North. Moreover they point out the tendency of investing in low developed neighbour countries being an interesting feature of South-South FDI, indicating that the competitive advantage of MNCs from the South lies in their ability to function in a similar economic and institutional environment. However, measurement problems remain because of the underreporting of outflows by advanced economies as well as inflows by developing host-countries, and in particular because of the "round tripping" of FDI in Asia, e.g. between China and Hong Kong, due to the preferential treatment in taxation, exchange controls etc. of non-residential investors. Other issues may be FDI outflows from offshore financial

centres and the routing of North-South FDI through developing countries, e.g. a US MNC located in Mexico investing in Brazil, which blur the empirical evidence.

Having at least a rough estimator of South-South FDI flows, Aykut and Goldstein (2007) evaluate the contribution of outward FDI to South-South cooperation in general and its development consequences. They emphasise the fact that the traditional 'OLI approach', the conceptual framework accounting for the motivation of outward FDI and MNCs by 'ownership', 'location' and 'internalisation' often does not apply to emerging market multinationals. Indeed, MNCs from developing countries rarely have resources such as proprietary technology, financial capital, brands, and experienced management. However, reversely, they internationalise *in order to* build these advantages, which led Mathews (2006) to develop the alternative 'LLL paradigm'. Emerging market multinationals internationalise by 'learning': they internationalise very early in their life; by 'leverage': they use organisational- instead of technological innovations; and by 'linkages': they innovatively connect with incumbents in order to exploit their latecomer status to advantage.

2.2.2 Determinants of South-South FDI: push and pull factors

Important push factors of South-South FDI are the increased capital supply as a result of the rising wealth, capital account liberalisation, the search of MNCs from the South for higher returns and portfolio diversification resulting in market-seeking activities, efficiency-seeking activities in order to compensate for decreased export competitiveness, and last but not least the procurement of raw materials and certain government stimuli (Aykut & Ratha, 2004). Pull factors or drivers of FDI flows to developing countries include the low labour costs, the several liberalisation measures by host-country governments, the familiarity with the local business environment in geographical, ethnical and cultural terms, the growing domestic markets and the availability of the coveted natural resources.

Another interesting study in this field is the empirical research of Dippenaar (2009) on the drivers of FDI flows from South Africa to sub-Saharan Africa from the perspectives of MNCs. As pull factors especially the opportunities of high returns and the factors of market growth, low competition and increasing liberalisation matter, whereas geographical and financial diversification and a small domestic market are the main push factors. However these factors differ a lot between different industries. A notable feature is that South African MNCs tend to be insensitive to various policy incentives for attracting FDI, purely basing their investment decision on commercial arguments.

Likewise, Anyanwu (2011) shows in an empirical study on the drivers of FDI inflows to Africa the importance of market size, openness to trade, government consumption expenditures,

international remittances, agglomeration and the abundance of natural resources to attract FDI. He points out that particularly the enhanced regional cooperation and integration increases the market size in Africa. His finding that higher financial development negatively effects FDI inflows leads him to the indication that FDI may be a substitute of domestic financial market development in Africa. The importance of an export-oriented regime, as earlier emphasised by Balasubramanyam et al. (1996), underlines the importance of a quick conclusion of the WTO Doha Development Round. Finally he finds that East and Southern African sub-regions obtain significant higher levels of FDI.

2.2.3 Differences between North-South and South-South FDI flows

One of the main questions of most research on South-South FDI flows is whether these investment flows significantly differ from the more traditional and well-known North-North and North-South flows. In their analysis of the magnitude of South-South flows, Aykut and Goldstein (2007) indicate that many developing countries see South-South cooperation as a complement to North-South cooperation, in order to develop their economies and overall wealth. More specific, low-income countries with small markets do mostly not attract any investor from advanced Northern economies (for which market size is an important driver), whereas South-South FDI does seek opportunities in those countries. Furthermore, the increase in South-South FDI offsets the decrease in investments from advanced economies in the recent years of financial crisis. And thirdly, as mentioned before, MNCs from developing countries have greater familiarity with technology and business practices suitable for developing-country markets. A difference in favour of North-South FDI, more precise MNCs from the North, is that the latter often display far more transparency, use much higher labour- and environmental standards and apply rules of corporate social responsibility (CRS). In addition, the prominent state-ownership of various MNCs from developing countries may hinder the stability of FDI flows from these MNCs, as their investments may not merely be driven by economic-, but also political and strategic reasons.

Bera and Gupta (2009) do a similar analysis in the context of India, finding that the major difference between North-South and South-South FDI flows to India is that investments originating from the South concentrate more in dynamic/growing sectors. But overall their conclusion is that FDI flows from both sources do not really differ concerning their allocation: both are mainly concentrated in export-oriented, larger markets with lower import intensity.

Looking at Asia as a whole, Lipsey and Sjöholm (2011) conclude that North-South- and South-South FDI flows differ in sector, plant size, productivity and spillovers. Relative to North-South FDI, South-South FDI tends to concentrate in less capital- and technology-intensive sectors. The plants owned by MNCs from developing countries tend to be much smaller than those owned by developed country investors, and the latter tend to have a higher productivity. Finally they find

an indication that activities from developed country MNCs tend to have positive spillovers to the host-economy, whereas MNCs from developing economies do not.

Aleksynska and Havrylchyk (2013) use a broader perspective when looking at developing and transition economies worldwide; they find that FDI from the South has a more regional aspect than investment from the North; for the former, a common border and common distance appears to be important. While confirming the deterring impact of large institutional distance for investors from the North, they find a more complex relationship for developing market MNCs. First, when firms from the South invest in countries with better institutions, institutional distance seems to be a driving force, and in those cases FDI has an asset-seeking nature, acquiring new technologies, brands, and intellectual property. Second, like North-South FDI, also South-South FDI is on average deterred by the worst institutions, but since they do invest in countries with similar or marginally worse institutions, investments from the South also flow to countries with bad institutional quality. And third, the deterring effect of bad institutions can be diminished by the abundance of large reserves of natural resources; developing countries (and their MNCs) show the tendency to secure the possession of subsoil resources. Finally Aleksynska and Havrylchyk find that South-South FDI appears to be complementary to North-South investment, i.e. indication a crowding-in effect.

The conclusion of South-South FDI being more regional is supported by the findings of Sosa Andrés, Nunnenkamp and Busse (2013), concluding that economic geography is more important for developing country MNCs. The risk attitude of investors from the South is the same and Sosa Andrés et al. find no significant evidence of the importance of resource abundance and superior technology in the host-country, concluding that these are just minor pull factors.

Box 2.1 – The example of China and Africa

The main sources of FDI flows from "the South" to Africa are the BRICs countries (Brazil, Russian Federation, India and China), of which China is a major investor. Although China is globally still a minor player in FDI to (sub-Saharan) Africa, Mlachila and Takebe (2011) show that its share has grown rapidly during the last decade, increasing from less than half a percent in the early 2000s to about 4½ percent in 2007. In 2009 more than a half of China's investments in LICs flow to Africa, of which South Africa was the major recipient, followed by Nigeria, Zambia and the Democratic Republic of the Congo.

Amongst the channels through which Chinese investments flow to Africa are individual private entrepreneurs as well as large state-owned enterprises. In particular in the case of China and Africa, investment projects in natural resources take often the form of *packaged investment* involving related infrastructure projects (Mlachila & Takebe, 2011). Hence, in terms of volume,

the natural resource and infrastructure sectors attract the biggest share of Chinese FDI, mainly because this is the field of interest of large state-owned firms. However, since private firms tend to focus more on manufacturing and services, the number of projects in these sectors is also growing.

Concerning the infrastructure and other construction projects, Mlachilla and Takebe indicate that the links with the local economy are weak, since Chinese MNCs often bring their own Chinese workers. Links in manufacturing appear to be stronger. Aside from the concern of China to secure natural resources, Chinese FDI flows to Africa are driven by the abundance of foreign reserves, the Chinese government support, rising domestic labour costs and more acceptance of risk by MNCs, whereas pull factors on the Africa side are the abundance of natural resources, the improving investment and business climate, better macroeconomic conditions, economic liberalisation and deregulation, privatisation, and preferential trade schemes.

The impact of FDI from the BRICs, and in particular from China is at least five-fold: first the investments have helped Africa to tap the natural resources, resulting in an increase in exports, better balance of payment conditions and more fiscal space for some African governments. Secondly, for example in Ghana FDI has increased the production capacity in manufacturing. A third factor is the fostering of regional integration through better transportation and communication networks. Fourthly, FDI from BRICs brings further technological upgrading and employment, and fifthly it increased the competition between investors, which gave the African LICs more bargaining power (Mlachila & Takebe, 2011).

In the specific case of Chinese investments in Sudan, Rui (2010) concludes that the positive development consequences of South-South FDI are not only caused by its capacity appropriate for developing countries, but also to its business strategies that are more adaptable to the environment in the developing host-country. His research points out that the causality between improved institutions and effectiveness of FDI in this case may be that a proactive adaptation of strategy by MNCs to fit the local institutions may be more effective for improving institutions and consequently the development in host-countries, than the often advocated need to improve institutions in order to attract FDI.

3. Theoretical framework: how FDI affects economic development

The discussed literature shows that FDI indeed does affect economic growth, although the empirical results are mixed. Different channels have been mentioned through which FDI may be growth-enhancing. These theoretical explanations have mostly been based on the practice of North-North or North-South FDI, but many will be useful in the perspective of mere Southern actors as well. This section summarises the channels through which FDI affects growth as mentioned in the literature part, and applies this theoretical framework on the case of South-South investments.

In general two main types of FDI are distinguished: horizontal- and vertical investments. Each type has a different impact on the home- and host-economy and a different nature: horizontal FDI is characterised as *market-seeking*, i.e. to serve the host-economy's local market, vertical FDI is mostly *resource-seeking*, i.e. to serve the home-country's needs. In addition Dunning (1993) distinguishes an *efficiency-seeking* form of FDI, e.g. investments that take advantage of labour costs in the host-country, and *strategic asset-seeking* investments. While the first three types of FDI can be seen as 'asset exploiting', the fourth compares to the 'LLL-paradigm' proposed by Mathews (2006), since in this case the MNC invests in order to gain knowledge that is not inside the firm, which is often the motivation for South-North FDI. Since this paper concentrates on North-South and South-South FDI, this theoretical section will focus on the first three types of investments.

Investments affect the home- and host-economy's growth capacity in the first place directly through the accumulation of capital and technology, the increase in employment and infrastructure, and economies of scale. Moreover, an increasing number of indirect effects, the so called "spillovers" have been identified, including productivity externalities and linkages with local firms.

The distinction between direct and indirect effects of FDI will not always hold, but for simplicity the externalities of FDI towards local firms and employees are treated as indirect effects.

3.1 Direct effects of FDI

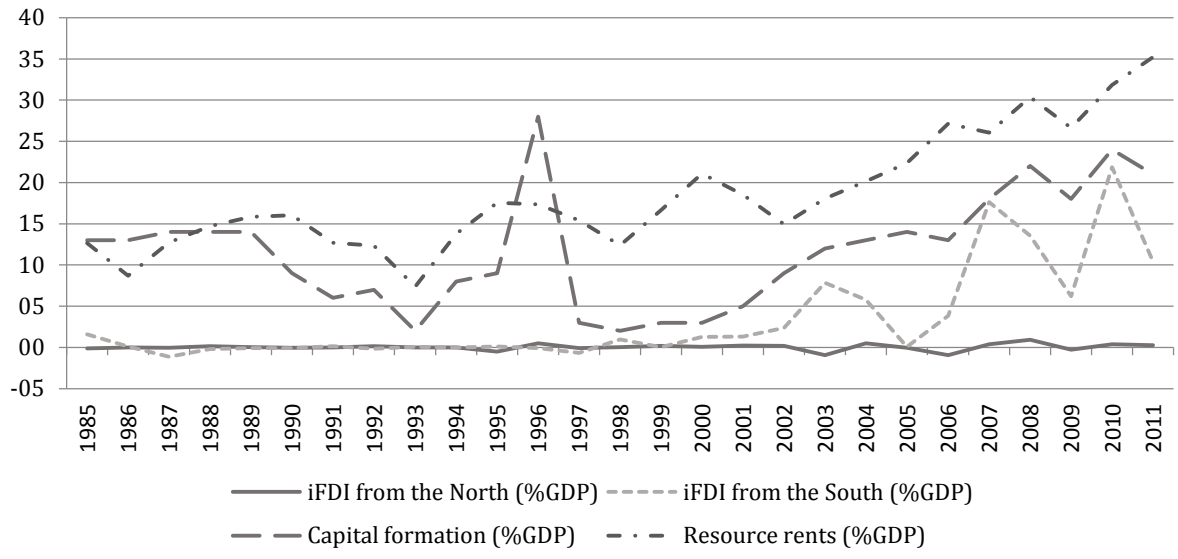
The most direct effect of foreign direct investments on the host-economy is the increase of its capital stock, often accompanied by an increase in the level of technological development, since FDI flows to a developing economy take the form of a technology transfer (Borensztein, De Gregorio, & Lee, 1998). Developing countries traditionally face a capital shortage, thus the increase of the overall capital formation by FDI inflows may be vital to develop in economic terms. Moreover, the level of technology and knowledge in the host-country may improve, since also in South-South cooperation FDI inflows will mostly stem from more advanced economies

(Nunnenkamp, 2004). For example in the Democratic Republic of the Congo (Figure 3.1) increases in FDI inflows from other developing economies move together with a quadrupling of the share of capital.

FDI activities may also create jobs and hence increase employment, especially in the case of labour intensive FDI, and foreign MNC's affiliates tend to pay relatively higher wages in competitive labour markets (Görg & Greenaway, 2004). Moreover, as in the case of China and Africa (Box 2.1) FDI may also boost the host-economy's infrastructure development (Mlachila & Takebe, 2011) and by exploiting the natural resources provide more foreign exchange earnings for the host economy, as clearly visible in the example of DR Congo (Figure 3.1).

As a result of broadening its foreign activities, not only the investing MNC itself will benefit from the economies of scale, but the multinational expansion will stimulate more research and development activities, which will mostly concentrate in the home-economy at the MNC's headquarters (Blomström & Kokko, 1998). Hence, in particular in the case of vertical FDI, the home-economy may benefit in terms of technology and knowledge as well. Moreover, outbound FDI may also result in more inflows in the home-country and FDI outflows and domestic investments are often complements (Feldstein, 1995).

Figure 3.1 - DR Congo: FDI, capital formation and resources rents



Data source: World Bank WDI / own calculation, see Section 4.2.

3.2 Indirect effects of investment activities of MNCs

Although FDI may increase the overall capital formation, employment and infrastructure development, the technology transfer which may boost long-term economic growth occurs mainly through the channel of spillovers. The investment activities of foreign multinationals have

indirect effects or externalities – either positive or negative – to the host-economy as a whole and its local firms. Indeed, the direct productivity benefits of the FDI activities will largely flow back to the MNC and its home-country, since investing firms try to ensure that firm-specific assets and advantages do not spill over (Görg & Greenaway, 2004). However, when the host-economy and local firms benefit from the investment activities through spillovers, FDI inflows may translate into long-term economic growth for the recipient country. Each type of FDI generates specific externalities, which can also be counter-forces, for example the competition effect and the backward linkage effect (Markusen & Venables, 1999): the competition effect is crowding-out domestic firms, whereas through backward linkages domestic firms strengthen their position.

3.2.1 Demonstration and imitation

The first channel through which the local economy may gain from foreign MNC activities is the channel of demonstration and imitation. Through demonstration local firms will become familiar with new production and management practices and when they adopt them by imitating the MNC, these innovations may increase their productivity (Görg & Greenaway, 2004). The level of imitation will depend on the complexity of the introduced products and processes: simple manufactures will be the easiest to imitate. Hence the magnitude of the technology gap between home- and host-economy plays an important role, with the largest demonstration effects to occur when the used technology in FDI is compatible with the host-economy's development level (Nunnenkamp & Spatz, 2004). This implies that in particular efficiency-seeking FDI, which is attracted by the comparative advantages of the local economy, will induce externalities through demonstration and imitation. The used technology in vertical FDI – in developing host-countries being concentrated in the natural resource sector – may often be too complex, whereas horizontal FDI spillovers will depend on the degree of technology or labour intensity. In developing countries this means that investments in labour intensive production which uses innovative production- or management methods will have larger spillovers to local firms.

3.2.2 Acquisition of skills

Related to the former spillover-channel, local firms and the host-economy may also benefit from the technology- and knowledge-transfer by FDI through skill acquisition. Even though FDI in developing countries may be pulled by the relatively low wages, MNCs will invest in education and training to have relatively skilled workers (Görg & Greenaway, 2004). Labour mobility will then generate productivity improvements for other existing or new local firms when the MNC's employers move to other firms or start their own business, and directly through knowledge-spillovers to complementary workers at the MNC's affiliate. Especially in developing countries with a low level of education this may be an important channel for productivity gains, and again

this spillover-channel will do best in labour intensive sectors of efficiency-seeking and horizontal FDI.

3.2.3 Competition

The major source of productivity gains in the host-country is the increased competition. Unless the investing MNC is offered monopoly status, it will compete with existing local firms, which will force the latter to produce more efficiently and increase their speed of adoption of new technology (Görg & Greenaway, 2004). However, it may also replace local firms by crowding-out domestic producers, in particular in the case of horizontal FDI. Hence the host-country will only gain from the competition channel when the local firm's productivity gains offset the displacement of the unproductive ones by the MNC's foreign affiliates.

3.2.4 Exports

Similar to the imitation channel, domestic firms in the host- as well as the home-country can learn from the investing MNC how to access foreign markets with exports (Görg & Greenaway, 2004). This learning process includes knowledge about consumer's tastes, regulations and infrastructure, and does of course apply to resource-seeking and efficiency-seeking FDI. Spillovers from exports, or *market access spillovers*, can thus be indirectly, by copying the MNCs strategies and using their knowledge on penetrating foreign markets, but also more directly, when local firms are suppliers or sub-contractors to the exporting MNCs, hence gaining from access to foreign markets in terms of economies of scale (Blomström & Kokko, 1998). Although the benefits from this channel may be hard to achieve for developing countries, the gains from the increased involvement of host-country in the world trade system will induce a significant growth potential (Lipsey, 2004).

3.2.5 Linkages

Linkages between a MNC's foreign affiliate and its local suppliers and customers are important sources of productivity spillovers. The domestic firm that is linked to the MNC may gain from the superior knowledge and technology without paying for it, i.e. externalities from the multinational's activities (Blomström & Kokko, 1998). The MNC's affiliate's relationships with local suppliers create backward linkages, while contracts with customers result in forward linkages. The backward linkages may take the form of technical support to raise the quality of the produced input-goods, management training or assistance in purchasing raw materials. Forward linkages, including high quality standards and a more specialised output, may induce gains for local distributers and sales organisations (Blomström & Kokko, 1998). For linkages to occur it is important that FDI is orientated on the local market and integrated in the local

production and sales. Hence horizontal FDI, being focussed on the host-economy's market, will create the largest spillovers through linkages.

3.3 Expectations on the growth effect of South-South FDI

Summarising the theory on direct effects and spillovers of FDI, resource-seeking vertical FDI is expected to have the smallest growth-enhancing effect, whereas horizontal and efficiency-seeking FDI tend to have significant positive effects on economic growth (Table 3.1). In the case of South-South FDI, the literature on the one hand suggests that spillovers are small, since investments are mainly resource-seeking, while North-South FDI may also be efficiency-seeking (Lipsey & Sjöholm, 2011). On the other hand empirical literature shows that FDI from the South is more familiar with local markets and technologies in developing host-economies, which may increase their spillovers. In particular in Asia, market size is an increasing important pull factor, but market-seeking FDI stems still mainly from investors from the North (Aykut & Goldstein, 2007). Hence the spillovers through linkages could be substantial for South-South FDI and larger than in the case of North-South FDI. Another factor of importance is that also countries with worse institutions are able attract investors from the South (Aleksynska & Havrylchyk, 2013). However, given the current focus on natural resources by Southern investors, spillovers are expected to have no significant positive effect yet, and neither Southern nor Northern investors are deterred by the worst institution in the case of resource-seeking FDI.

Thus, on a global scale, South-South FDI is expected to have a smaller impact on economic growth than North-South FDI; the former is mainly resource-seeking at the moment, while the latter also looks for efficiency and market opportunities. However, South-South FDI has the highest growth potential, since horizontal FDI from emerging economies will have larger spillovers to the host-economy.

Table 3.1 – Spillovers from different types of FDI

Type of FDI	***Impact on the host-economy***
Resource-seeking	Little spillovers due to complex technology
Market-seeking	Demonstration and imitation when labour intensive
	Acquisition of skills
	Positive competition effect: productivity gains
	Negative competition effect: displacement of weaker firms
	Linkages between local firms and MNC
Efficiency-seeking	Demonstration and imitation
	Acquisition of skills
	Learning effects on penetrating export markets

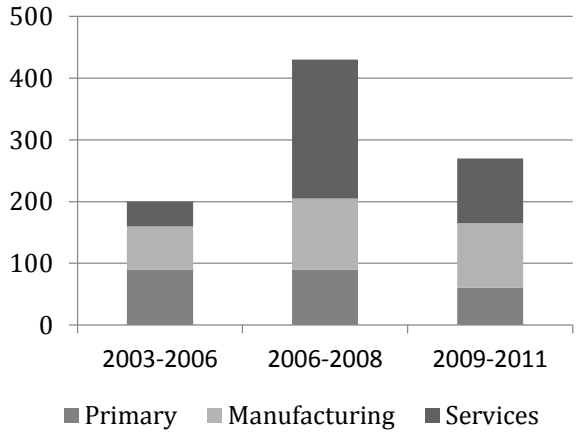
4. Empirical analysis: the case of Africa

Both theory and the existing empirical literature give mixed results on the growth effects of FDI in general and on the effects of South-South FDI in particular. Different samples of developing countries or regions show that various country characteristics are important preconditions for FDI to be growth-enhancing. This section uses the example of Africa to analyse the effect of South-South FDI on the economic growth of African host-countries, using panel data analysis.

The African continent is home to some of the world's fastest growing economies. In 2011, a third of the continent shows grow-rates at or above 6 per cent, with Sierra Leone, Niger and Angola on top of the list (25 per cent, 14 per cent and 8 per cent, respectively), growing faster than China for example (7.5 percent). The region of sub-Saharan Africa showed a growth rate of about 5 per cent in 2012 for the third year in a row (World Bank, 2012). The fastest growing economies are mainly driven by new mineral exports (Sierra Leone and Niger), a return to peace (Cote d'Ivoire) and robust growth in the non-minerals sector (Ethiopia). Since improved macroeconomic policies and political stability are the basis for Africa's economic expansion since 2000, the prospects of sustained growth are strong (World Bank, 2012). The increased openness to the world economy may be a threat due to greater vulnerability to global shocks, but also an opportunity for economic development, not least because of the intensified relationships between African countries and the BRICs: in 2009 China has overtaken the USA as Africa's major trading partner (OECD, 2010).

Regarding foreign direct investment, the African continent as a whole faced a decline in FDI inflows during the last three year. However, this picture does not reflect the situation across all parts of the continent; in fact this reduction was almost entirely due to the political unrest in North Africa, while FDI inflows to sub-Saharan Africa increased (UNCTAD, 2012). Traditionally the major recipients of FDI to Africa in the North are Algeria, Egypt and Libya, and South-Africa, Ghana and Nigeria in sub-Saharan Africa. Since 2008, FDI inflows to Africa accounted for between 2.8 and 4.4 per cent of the world's total, while FDI outflows where no more than 0.5 per cent. The top 5 home-economies in 2011 consist of Angola, Zambia, Egypt, Algeria and Liberia, accounting for about $4.2 billion FDI outflows. The limited volume of FDI to African

Figure 4.1 - Value of greenfield investments in Africa, by sector, 2003–2011 (Billions of USD)



Data source: UNCTAD (2012)

economies tends to make inflows variable over the years. In the last decade data on greenfield projects show that the relative importance of the primary sector is declining, because the emergence of a middle class is stimulating investments in services such as banking, retail and telecommunications (see Figure 4.1). However, this shift is not about a decline of the extractive industry, but rather a diversification of natural resource-related projects: many of the activities in manufacturing and services are based on the abundance of natural resources or support the extraction of it.

4.1 Hypothesis

In Section 3 theoretical arguments have been collected to analyse the effect of FDI on growth in general and South-South FDI in particular. On a global scale the latter tends to have smaller growth-effects at the moment, because it currently focuses on resource-seeking investments. However its growth potential is large, since spillovers from investments by Southern MNCs tend to be larger than from investors from the North.

In Africa, the main fields of interest for FDI are the extraction of natural resources, infrastructure projects and the increasing consumer demand from the growing middle class. As indicated before, the major part of investments is resource-seeking and located in the primary sector or supportive sectors. This does not differ between FDI flows from North and South. In fact, Northern investors seek for new growth opportunities, whereas Southern economies, e.g. the BRICs, invest to fuel their growth and expand their firms. This leads to the expectation that, since vertical FDI induces little spillovers, the growth effects from FDI inflows from both North and South will have only a small effect on economic growth in Africa. This effect may be enlarged in the case of Southern investors like China (see Box 2.1), because their *packaged investment* in the primary sector may have indirect growth effects through the increased quantity and quality of infrastructure. Finally, although still a small part in Africa, market-seeking (and efficiency-seeking) FDI from the South may have larger spillovers than North-South FDI, due to familiarity with local markets and business practices. Hence the following two null hypotheses are proposed:

Hypothesis 1. FDI inflows from both North and South have a small but positive significant effect on economic growth in Africa;

Hypothesis 2. FDI inflows from the South have a larger growth-effect than inflows from the North since market-seeking FDI from the South induces larger spillovers.

The alternative hypotheses hence are: FDI from one or both directions has no positive significant effect on GDP per capita growth; FDI from the South has no significantly larger effect on growth.

4.2 Data

The empirical analysis focuses on the African continent, including 53 countries[2] in Africa (see Appendix A.1). Although the full sample consists of very different countries, this analysis should give a sufficiently clear picture of the effect of FDI on growth in Africa as a whole. The time frame is the 27-years period of 1985-2011. The variables used in the regression models are extracted from three sources: the statistical database from the UNCTAD (UNCTADstat), the International Direct Investment Statistics from the OECD iLibrary, and the World Development Indicators (WDI) databank from the World Bank.

4.2.1 Main variables: GDP per capita and FDI inflows

To measure the effect of FDI on economic development, *GDP per capita* in constant 2005 US dollars is used as a measure of development. This choice is not without criticism, since the average share in production is neither the only nor the best measure of development: well-being, economic welfare and sustainability may be better alternatives (e.g. Bleys, 2012). Especially in countries like the BRICs, the impressive growth-rates are often accompanied by increasing income inequality, political tensions and environmental pollution. However, for simplicity, real GDP per capita seems to be the most accurate and objective measure for economic development. Both *GDP* and *GDP per capita* are taken from the UNCTADstat database. Table 4.1 shows the top- and bottom-ranked countries sorted on GDP per capita and average annual growth.

Table 4.1 – GDP per capita and average annual growth

Top 3 – GDP per capita 2011, current USD			**Top 3 – average annual growth 1985-2011**	
Equatorial Guinea	$	22,309.31	Equatorial Guinea	22.6%
Gabon	$	15,537.57	Angola	10.7%
Seychelles	$	12,046.52	Botswana	9.6%
Bottom 3 – GDP per capita 2011, current USD			**Bottom 3 – average annual growth 1985-2011**	
Dem. Rep. of the Congo	$	233.15	Zimbabwe	-0.1%
Burundi	$	200.66	The Gambia	-0.7%
Somalia	$	114.80	Burundi	-1.6%

Data source: UNCTADstat / own calculation.

The used calculation method to distinguish between *FDI inflows from the North and inflows from the South* is developed by Aykut and Ratha (2004). They take the high-income OECD countries plus high-income non-OECD countries as a rough measure for "the North". The high-income OECD countries include all OECD members except Mexico and Chile (see Appendix A.2). Unfortunately there is virtually no aggregated outward FDI data for high-income non-OECD countries, which limits "the North" to only the high-income OECD countries in this analysis. Following Aykut and Ratha, and using the total FDI inflows from the OECD countries to African

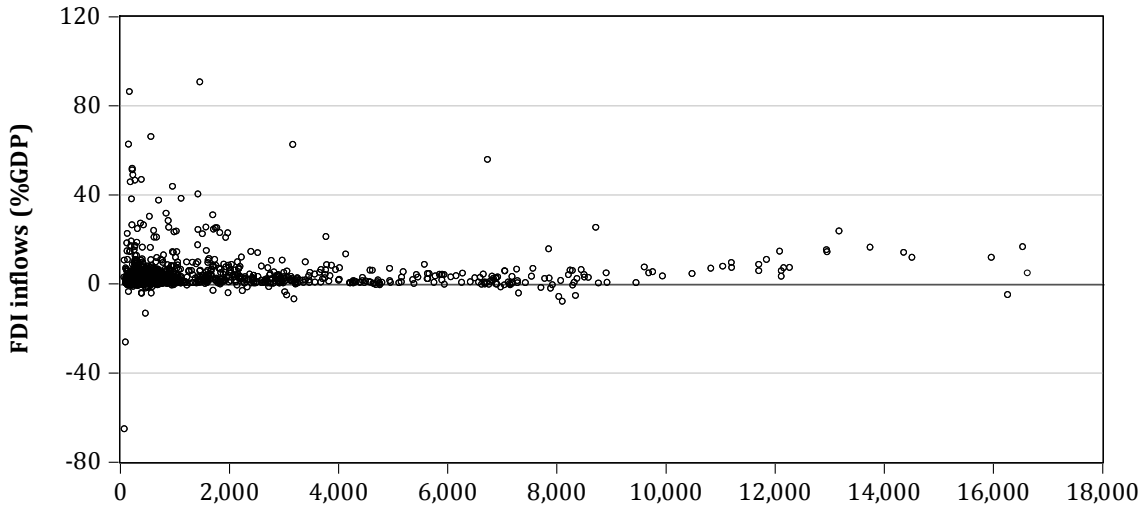
[2] Africa consists of 55 countries, but two countries are excluded from the panel data analysis: South Sudan became an independent state in 2011, and Saint Helena has no data available.

countries provided by the OECD database, the implied inflows from the South per country per year are calculated:

$$FDI\ inflows\ from\ the\ South\ (\%\ of\ GDP) = \frac{total\ FDI\ inflows - FDI\ inflows\ from\ OECD}{GDP}$$

The total FDI inflows per country are taken from the UNCTADstat database; Figure 4.2 shows a scatter of the FDI inflows and GDP per capita. The OECD and UNCTAD use the same definition for FDI, namely a long-term relationship and a lasting interest and control (a significant degree of influence) by a resident entity of one economy (foreign direct investor or parent enterprise) of an enterprise resident in a different economy (FDI enterprise or affiliate enterprise or foreign affiliate). The measure of FDI flows contains both the initial transaction between the two entities and all other subsequent capital transactions between them and among affiliated enterprises, both incorporated and unincorporated, and consists of three components: equity capital, reinvested earnings and intra-company loans. The data are on a net basis: a negative sign indicates that at least one of the three components of FDI is negative and not offset by positive amounts of the remaining components, i.e. reverse investment or disinvestment.

Figure 4.2 – Total FDI inflows vs. Real GDP per capita



4.2.2 Control variables

To measure the effect of FDI inflows on GDP per capita, the required control variables are derived from the analysis on growth-effects of Barro and Sala-i-Martin (1995) and the regression analysis of Borensztein et al. (1998) on the effects of FDI on economic growth, complemented with some other variables based on the described literature in Section 2. All variables are taken from the World Bank WDI database.

The *initial level of GDP per capita*, i.e. the level in the first year of the sample: 1985, is often used as an indicator for conditional convergence. Amongst others Barro and Lee (1994) point out that a country may grow faster if it begins with a lower per-capita GDP level relative to its initial level of human capital. Hence, a negative coefficient would indicate that the African economies converge. However, since all African economies are classified as developing (UNCTAD, 2012), this variable is more important as a country fixed effect.

To control for the level of investment and industrialisation the *gross capital formation in % of GDP* is added. This variable accounts for the traditional factor of capital, and consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. An increase in the level of domestic and foreign investments is expected to be growth-enhancing. To avoid overlap the total FDI inflows are subtracted from the gross capital formation, since the latter consists of domestic and foreign investments.

The *labour participation rate as % of total population above 15* accounts for the other traditional production factor. This variable represents the proportion of the population ages 15 and older that is economically active in supplying labour for the production of goods and services. Following the theory, an increase in the total labour force ceteris paribus, i.e. assuming constant technology, will increase the level of production.

The involvement of the government in the economy is measured by the *general government final consumption expenditures as % of GDP*. This variable includes all government current expenditures for purchasing goods and services, excluding expenditures that are part of the capital formation, e.g. military expenditures. The literature is ambiguous on the effect of government expenditures on economic development: on the one hand it stresses the importance of the provision of public goods, on the other hand there may be a danger of replacement of the private sector and negative effects of bad governance. Hence, government expenditures may be neither too small, nor too large, for which reason the expected effect for the case of Africa is unclear.

To control for the level of human capital, the *gross % of school enrolment in secondary education* is used. A sufficient level of schooling is most important for the absorptive capability concerning the technological spillovers from FDI (Borensztein, De Gregorio, & Lee, 1998). Secondary schooling completes the provision of basic education and offers more skill-oriented instruction. This variable is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Intuitively this measure should have a positive direct effect on the growth of GDP per capita; the theorem of Borensztein et al. (1998) would be supported by a positive interaction effect with FDI inflows.

Trade as % of GDP provides a measure for trade openness, being the sum of exports and imports of goods and services measured as a share of GDP. As indicated in the literature part, trade liberalisation and export-oriented policies enhance economic growth (e.g. Balasubramanyam et al., 1996).

Since a significant number of African developing countries is or used to be highly indebted, the *total debt outstanding and disbursed as % of GDP* is used as a measure of indebtedness. Total debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. The debt-to-GDP ratio is an indicator of an economy's health, since it indicates whether the gross domestic product is high enough to pay back debts. Hence a high amount of debt may negatively affect economic growth via the deterrence of investors (e.g. Bengoa & Sanchez-Robles, 2003).

Another problem for which some African economies are known for, is the level of inflation. The *inflation as measured by the consumer price index* is the annual percentage change in the average consumer's cost of living. Being a measure of macroeconomic stability, a high level of inflation is expected to have harmful effects on economic development.

To take account for the level of *financial development*, the provision of *domestic credit to the private sector as % of GDP* is used. This financial measure includes loans, purchases of non-equity securities and trade credits, and empirical evidence show that it is an important factor in economic development (e.g. Hermes and Lensink, 2003). Therefore an increase in the level of financial development is expected to have a growth-enhancing effect.

The quality of the rule of law is measured by the additive eleven-point *institutionalised democracy* dummy (0-10). This measure consists of three interdependent elements: first the presence of institutions and procedures through which citizens can effectively express preferences about alternative policies and leaders, second the existence of institutionalised constraints on the exercise of power by the executive, and third the guarantee of civil liberties to all citizens in their daily lives and acts of political participation. Since this variable will also take account for wars, conflicts and political unrest, this dummy is expected to have a positive effect on economic development.

Finally, the *total natural resources rents as % of GDP* are used to account for the contribution of natural resources to economic output. This measure is the sum of oil rents, natural gas rents, hard and soft coal rents, mineral rents, and forest rents. Since in some countries earnings from resource-extraction account for a substantial share of GDP, economic rents will be significant. However, rents from non-renewable resources, such as fossil fuels and minerals, as well as rents from overharvesting of forests will induce no long-term gains, unless a country uses these rents

to invest in new capital rather than to support consumption. A positive effect of resources rents interacting with FDI inflows would indicate that increasing resources rents are an important channel through which FDI inflows are growth-enhancing.

Appendix A.3 provides an overview of the descriptive statistics of all variables used in the regression analysis and Appendix A.4 shows a correlation matrix.

4.3 Methodology

Using the described data, a panel data regression is conducted to test the hypotheses as proposed in Section 4.1, i.e. to assess the role of FDI inflows from the North and South on the economic development of Africa. The used technique to estimate the regression is ordinary least squares. First three growth models are proposed to analyse the effects of FDI on growth. An additional model is presented to investigate whether North-South and South-South FDI inflows are complements or substitutes in the case of Africa.

4.3.1 Growth models

The growth models are estimated in three ways: (1) in absolute values, (2) in first differences and (3) in natural logarithms. Using these three different models has as its main function a robustness check, where the first and second models are the robustness checks for the third.

First the models in absolute values: GDP is regressed on the one period lagged FDI inflows, distinguishing North-South and South-South FDI:

$$(1.1) \quad GDPpc_{it} = \alpha + \beta_1 GDPpc_{i\,1985} + \beta_2 North_{it-1} + \beta_3 South_{it-1} + \delta_t + \varepsilon_{it}$$

with GDP per capita in country *i* at time *t* depending on a constant, the initial GDP per capita, FDI inflows from OECD countries ('the North'), FDI inflows from non-OECD countries ('the South'), time fixed effects and an error term. The initial GDP per capita serves as a country fixed effect. This model should indicate how the FDI inflows of the former period affect the current period growth of GDP per capita.

Models 1.2 till 1.8 are extensions of the first model:

$$(1.2) - (1.8) \quad GDPpc_{it} = \alpha + \beta_1 GDPpc_{i\,1985} + \beta_2 North_{it-1} + \beta_3 South_{it-1} + \beta x'_{it-1} + \delta_t + \varepsilon_{it}$$

extending model 1.1 with a vector of control variables. Models 1.3 – 1.8 include also interaction between *North* and *South* and some control variables.

Further on all models are expressed in their first differences: model 2.1 is again the most basic model with the first difference of GDP per capita depending on only the lagged FDI inflows; models 2.2 – 2.8 extend this model with a vector of control variables:

(2.1) $\Delta GDPpc_{it} = \alpha + \beta_1 \Delta North_{it-1} + \beta_2 \Delta South_{it-1} + \delta_t + \varepsilon_{it}$

(2.2) – (2.8) $\Delta GDPpc_{it} = \alpha + \beta_1 \Delta North_{it-1} + \beta_2 \Delta South_{it-1} + \beta \Delta x'_{it-1} + \delta_t + \varepsilon_{it}$

with the first difference of GDP per capita depending on a constant, the one period lagged first differences of FDI inflows from the North and the South, respectively, a vector of control variables, time fixed effects and an error term. Compared to the first and third group of models, this second group is estimated without the initial GDP per capita, since first difference models should be estimated without cross-section fixed effects.

The third group of models express all variables in their natural logarithms. Hence model 3.1 – 3.8 are model 1.1 –1.8 in logs:

(3.1) $(\log)GDPpc_{it} = \alpha + \beta_1 (\log)GDPpc_{i\,1985} + \beta_2 (\log)North_{it-1} + \beta_3 (\log)South_{it-1} + \delta_t + \varepsilon_{it}$

(3.2) – (3.8) $(\log)GDPpc_{it} = \alpha + \beta_1 (\log)GDPpc_{i\,1985} + \beta_2 (\log)North_{it-1} + \beta_3 (\log)South_{it-1} + \beta (\log)x'_{it-1} + \delta_t + \varepsilon_{it}$

with GDP per capita depending on a constant, the initial GDP per capita, the one period lagged FDI inflows from the North and from the South, respectively, a vector of control variables, time fixed effects and an error term, with again initial GDP per capita being the country fixed effect.

4.3.2 Model on complementarity of FDI inflows

In addition to the analysis of the growth-effects of FDI inflows, the following model is proposed to analyse whether the inflows from the North and South are complements or substitutes. Using the total FDI inflows per country in Africa as dependent variable – consisting of inflows from the North as well as from the South – the following regression models are proposed:

(4.1) – (4.2) $IFDI_{it} = \alpha + \beta_1 South_{it} + \beta x'_{it} + \delta_t + \varepsilon_{it}$

If FDI inflows from the North and South are complements, the coefficient for *South* is expected to be above one. One additional unit of FDI inflows from the South will then lead to an increase of the total FDI inflows by more than one unit, since inflows from the North will increase as well. If, on the other hand, the coefficient of *South* is significantly below 1, the FDI inflows from North and South are substitutes (Aleksynska & Havrylchyk, 2013). Based on the literature, FDI inflows from North and South to Africa are expected to be complements: Aykut and Goldstein (2007) find that North-South and South-South FDI complement each other, especially in less developed economies where investors from the South are less deterred by bad political and macroeconomic conditions than MNCs from the North. Aleksynska and Havrylchyk (2013) confirm this finding, showing that emerging country investors are 'crowding-in' investments from the North,

attributing this to differences in investment behaviour between developing and developed economies.

Besides the period fixed effects and the error term, a vector of control variables is added to model 4.1, consisting of variables which in literature are indicated as important determinants of FDI inflows. For developing economies in general (e.g. Aykut and Ratha, 2004), and in particular for Africa, the abundance of natural resources is an important pull factor for FDI (Anyanwu, 2011). Hence the revenues from natural resources are added as a control variable, expecting a positive effect on total FDI inflows. Furthermore the initial GDP per capita serves as a country fixed effect as well as an indicator for the effect of initial income.

Model 4.2 expands model 4.1 by adding total government consumption expenditures, institutionalised democracy, inflation, and school enrolment. Government expenditures are expected to have a positive effect on the amount of FDI inflows, since investing MNCs often benefit from the increased quantity and maintenance of infrastructure (Anyanwu, 2011). The democracy dummy and the level of inflation serve as indicators for political and macroeconomic stability: better institutional quality and a low level of inflation are expected to have a positive effect on FDI inflows (Blomström & Kokko, 2003). Finally, the percentage of secondary school enrolment accounts for the importance of a sufficient level of human capital, as indicated by Borensztein et al. (1998).

4.3.3 Methodology issues

Before looking at the results, some methodological issues demand attention. First, as indicated in the discussed literature, the issue of causality: does FDI cause GDP or vice versa? In order to check for this causality question pair-wise Granger causality tests are conducted on the dataset used in the regression analysis. Using the null hypothesis that variable X does not Granger cause variable Y, this test (with 4 lags) shows that the null cannot be rejected for *North* and *GDPpc* in both directions, and also for *GDPpc* not Granger causing *South*. The null hypothesis of *South* not Granger causing *GDPpc* is rejected at a 1 per cent significance level, indicating that the causal relationship may be in one direction. For the used control variables the Granger tests show that the null hypothesis is rejected for *Capital, Trade* and *Resources Rents* not causing *GDPpc*; the variables *Labour*, *Government*, *Schooling, Debt*, *Inflation, Financial Development* and *Democracy* show no Granger causal relationship with *GDPpc* either way.

Another important issue is the probability of correlation in the error term. Across countries, due to time-specific effects, e.g. a common shock, the data may be biased by correlated error terms, as well as heteroskedasticity. Although unable to test with a panel data analysis, the likelihood of the existence this problem is high enough to apply the alternative White period estimator

proposed by EViews© 7.1, providing corrected standard errors and covariance. This White period estimator is robust against heteroskedasticity along the cross-section dimension for a fixed *t*, and robust against autocorrelation along the time dimension for a fixed *i*. Other alternatives are the White cross-section and White diagonal estimator, but for N > T it is common practice to use the White period estimator, as is the case with the used dataset (N = 54, T = 27).

Finally, when adding all control variables, the panel is unbalanced, i.e. several countries lack some or more observations; the number of periods T is not the same for every country *i*. Except for the variable *Labour* (for which for each country *i* the years 1985 – 1989 are missing) the missing observations are randomly spread across the dataset. However, this issue urges to treat the results carefully.

4.4 Empirical results

Tables 1 – 3 present the results of estimating equation 1 – 3, respectively. As mentioned before, the results of the models in absolute values and first differences serve as a robustness-check for the log-model, of which the third has the greatest explanatory power with an R-squared of 61 – 86 per cent, compared to maximum 5.5 per cent for the first difference model. All models indicate a significant positive direct effect of FDI inflows from the North and South on the next year's GDP per capita. Model 3.2 shows that a 1 per cent increase in the level of FDI inflows from the North results in a 0.90 per cent increase of GDP per capita in the next year. For FDI inflows from the South this is 3.72 per cent, which is significantly larger at a level of 5 per cent, but this difference is not shown by model 1 and 2. The robust growth results on FDI inflows indicate that investments in Africa have growth-enhancing effects, which is in line with the findings of recent literature on developing economies in Latin America (Bengoa & Sanchez-Robles, 2003), East Asia (Chen et al., 2004), and China and India (Agrawal & Khan, 2011). For Africa, this result is more clear and robust than previous findings: e.g. Adams (2009) found ambiguous results concerning the effect of total FDI inflows, due to differences between countries concerning important preconditions such as schooling, infrastructure and financial development. Although these differences may still matter, the findings of this paper are also on an aggregate level robust. Besides from direct effects and the remaining importance of Africa's natural resource sector, the recent increase in investments in the manufacturing and services sectors may have given FDI the opportunity to induce more positive externalities to the local economies; findings from Nunnenkamp and Spatz (2004) show that the link between FDI and growth is strongest in the services sector.

Further on, models 1 and 3 show significant positive effects of schooling: an increase in the gross enrolment in secondary schooling will result in an increase of average GDP per capita in Africa, which is in line with the findings of Borensztein et al (1998). Model 3.2 indicates that an increase

of 1 per cent in school enrolment will have a growth-effect of 0.54 per cent. When looking at the interaction terms of schooling and FDI, the different models give mixed results: model 1.3 shows positive coefficients, model 2.3 negative, and model 3.3 mixed and insignificant results. Since for none of these models the direct effects of both schooling and FDI are significant, this sample does not support the findings by Borensztein et al. (1998) about the importance of the absorption capability of a country. This may be due to the importance of vertical FDI, which induces less knowledge spillovers, but also due to the familiarity of South-South FDI with local techniques: it that case the host-economy will be able to absorb the technological transfer of FDI from the South without a high level of schooling.

In model 1 as well as model 3 the initial GDP per capita, serving as a country-fixed effect, has a positive effect on the average level of GDP per capita. This significant results shows that African countries do not show a convergence effect when looking at GDP per capita; on the contrary countries with a higher level of GDP grow on average faster. This may be so because the sample consists of only developing countries, whereas the convergence theory will be more applicable in samples with developing as well as advanced economies (e.g. Barro and Lee, 1994).

The gross capital formation excluding FDI has a the positive effect, most clearly shown by model 3, indicating that an increase in the capital stock in a country on average leads to an increase in the next year's GDP per capita. This result is according to the growth theory, since an increase in the capital available will enhance the growth-potential of the economy, and also in line with previous findings in the case of Africa (e.g. Adams, 2009).

Concerning the labour participation rate and government expenditures, none of the models show that these control variables do significantly affect GDP per capita. The labour participation rate in Africa is quite constant over time and across countries, as can be seen in Appendix A.3, which may explain the insignificant results; other empirical literature do mostly not include this variable. Previous findings on growth, FDI and government expenditures in developing countries indicated a negative effect of government consumption (e.g. Bengoa & Sanchez-Robles, 2003; Adams, 2009); yet this paper finds no evidence for a negative growth effect.

The importance of openness to trade is confirmed by the findings of models 1 and 3: an increase of 1 per cent of the cumulative amount of imports and exports results in a 0.38 to 0.54 per cent increase in GDP per capita in the next period. This indicates that countries that are outward oriented and that are connected to the world trade system show a higher level of economic development, which is in line with the existing theoretical and empirical literature (e.g. Balasubramanyam et al., 1996; Zhang, 2001; Blomström & Kokko, 2003).

The results for a country's outstanding and disbursed debt are mixed for the 1st and 3rd model on the one hand, and the 2nd model on the other: the latter indicates a positive effect, whereas the former show the expected negative effect of debt on GDP. This difference may be due to two counter-effects: a country's GDP may grow on the short-term due to borrowed consumptions and investments, but the increase in debt may be harmful for long-term growth. Similar empirical research show negative coefficients for debt-to-GDP ratios (e.g. Bengoa & Sanchez-Robles, 2003).

The results on inflation are more uniform: all models give a negative effect, indicating that a high level of inflation results on average in a lower GDP per capita. This result confirms the expectations that countries with more macroeconomic stability will have higher levels of GDP, since the country risk for investors will be smaller, increasing the attractiveness for domestic and foreign investors (see e.g. Borensztein et al, 1998; Bengoa & Sanchez-Robles, 2003).

Concerning the growth-effect of a higher level of financial development, none of the models give significant results. Hence no supporting evidence is found for the findings of Hermes and Lensink (2003) concerning the importance of financial development for economic growth.

For the institutional democracy only the 1st model provides robust results: models 1.6 – 1.8 show significant positive results, but this is not supported by models 2 and 3. Problematic for this variable is the fact that countries that suffer from social and political instability often have already low levels of development, lack data for other variables, or perform badly on other variables, so that the negative effect of bad institutional quality is already absorbed by high inflation, less trade and financial development, etcetera. Previous research does indeed show a positive effect of political stability on economic growth for the region of Africa (Adams, 2009).

The results for the natural resources rents are inconclusive: the most significant result in model 1.7 shows a positive effect on GDP per capita, but this is still insignificant at a 10 per cent level. The same applies to the interaction effect between FDI inflows and resources rents: none of the growth models provides significant results. Hence, this analysis does not support the conclusion that resources rents are an important growth-channel of FDI (see e.g. Mlachila & Takebe, 2011).

TABLE 1: GDP per capita – absolute values	Regression Model							
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
Constant	394.161	-3,153.668	-2,612.682	-2,936.992	-2,043.962	-915.103	-1,008.869	-999.218
	(1.93) +	(-2.16) *	(-2.18) *	(-2.16) *	(-1.71) +	(-0.86)	(-0.95)	(-0.95)
Initial GDP per capita (1985)	1.231	0.817	0.866	0.815	1.206	1.117	1.033	1.026
	(4.37) **	(3.80) **	(4.52) **	(4.65) **	(10.86) **	(14.01) **	(10.63) **	(10.54) **
FDI inflows from the North (% of GDP)	31.031	52.072	-79.477	-99.480	-152.173	-59.083	-64.786	-97.828
	(1.21)	(3.05) **	(-1.07)	(-1.67) +	(-3.44) **	(-2.79) **	(-2.79) **	(-2.32) *
FDI inflows from the South (% of GDP)	32.874	45.758	-56.780	-80.390	-101.041	-13.756	-19.763	-19.292
	(1.26)	(3.08) **	(-0.88)	(-1.56)	(-2.33) *	(-0.76)	(-0.94)	(-0.81)
Gross capital formation (% of GDP)		41.408	46.958	33.047	-0.604	-2.701	-1.682	-1.619
		(1.56)	(1.79) +	(1.61)	(-0.05)	(-0.36)	(-0.23)	(-0.23)
Labour participation rate (% of population ages 15+)		27.174	23.422	24.652	14.559	2.661	3.275	3.145
		(1.56)	(1.50)	(1.47)	(1.07)	(0.24)	(0.30)	(0.29)
Government final consumption expenditure (% of GDP)		-19.989	-21.258	-38.828	16.621	-1.008	-2.448	-2.369
		(-0.64)	(-0.67)	(-1.09)	(0.86)	(-0.05)	(-0.14)	(-0.13)
Schooling (secondary, gross enrolment %)		46.916	34.236	36.344	31.460	19.252	20.914	21.028
		(3.21) **	(3.53) **	(3.50) **	(2.86) **	(1.35)	(1.43)	(1.43)
Schooling * FDI from the North			3.593	3.552	4.501	1.304	1.464	1.803
			(1.92) +	(1.94) +	(3.74) **	(2.12) *	(2.34) *	(2.35) *
Schooling * FDI from the South			2.923	2.920	3.315	0.213	0.379	0.367
			(1.64)	(1.72) +	(2.92) **	(0.40)	(0.69)	(0.65)
Trade (% of GDP)				12.133	4.103	6.502	5.849	5.816
				(1.76) +	(0.95)	(1.50)	(1.30)	(1.28)
Debt outstanding and disbursed (% of GDP)					-1.724	-1.709	-1.857	-1.797
					(-1.96) *	(-2.87) **	(-3.09) **	(-3.01) **
Inflation (consumer prices, annual %)					-1.421	-1.429	-1.718	-1.705
					(-1.28)	(-1.83) +	(-2.87) **	(-2.85) **
Financial Development (% of GDP)					2.681	10.459	10.968	10.939
					(0.36)	(1.27)	(1.32)	(1.32)
Institutionalised Democracy dummy (0-10)						48.240	53.845	54.142
						(1.95) +	(2.11) *	(2.12) *
Total natural resources rents (% of GDP)							10.727	10.375
							(1.63)	(1.19)
Resources rents * FDI from the North								1.230
								(1.47)
Resources rents * FDI from the South								-0.030
								(-0.07)
Fixed effects	year	year	year	year	year	year	year	year
Observations	1,371	993	993	888	714	694	694	694
Adjusted R-squared	0.472	0.600	0.616	0.639	0.852	0.844	0.848	0.848

Note: Robust t-statistics in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. All independent variables are one year lags.

TABLE 2: GDP per capita – first differences	Regression Model							
	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
Constant	29.610	40.265	40.540	44.699	24.807	16.869	16.713	16.488
	(2.11) *	(1.92) +	(1.99) *	(1.94) +	(2.26) *	(1.94) +	(1.90) +	(1.90) +
FDI inflows from the North (% of GDP)	1.117	3.245	5.373	5.525	2.630	0.042	0.523	0.401
	(0.98)	(2.30) *	(3.23) **	(3.48) **	(0.91)	(0.02)	(0.32)	(0.24)
FDI inflows from the South (% of GDP)	0.616	2.818	2.125	1.863	1.406	-0.734	-0.327	-0.529
	(1.06)	(2.69) **	(1.46)	(1.07)	(0.59)	(-0.40)	(-0.21)	(-0.31)
Gross capital formation (% of GDP)		1.624	0.980	0.686	2.454	0.524	0.748	0.894
		(1.50)	(0.78)	(0.49)	(1.36)	(0.90)	(1.75) +	(1.39)
Labour participation rate (% of population ages 15+)		-1.789	-0.442	0.091	3.527	-3.690	-3.841	-4.028
		(-0.14)	(-0.04)	(0.01)	(0.33)	(-0.50)	(-1.53)	(-0.57)
Government final consumption expenditure (% of GDP)		-1.348	-1.546	-1.443	-2.878	-2.503	-2.415	-2.285
		(-1.23)	(-1.48)	(-1.24)	(-1.77) +	(-1.39)	(-1.33)	(-1.26)
Schooling (secondary, gross enrolment %)		-1.703	-1.717	-2.318	6.176	7.061	7.111	7.221
		(-0.25)	(-0.27)	(-0.32)	(2.75) **	(2.68) **	(2.65) **	(2.75) **
Schooling * FDI from the North			-5.725	-6.565	-1.326	-0.117	-0.228	-0.223
			(-1.78) +	(-1.88) +	(-0.75)	(-0.08)	(-0.17)	(-0.16)
Schooling * FDI from the South			-2.536	-2.859	0.340	0.818	-0.777	0.804
			(-1.75) +	(-2.04) *	(0.36)	(0.68)	(-0.67)	(0.64)
Trade (% of GDP)				0.441	0.304	-0.256	-0.405	-0.476
				(0.72)	(0.47)	(-0.63)	(-1.20)	(-1.37)
Debt outstanding and disbursed (% of GDP)					0.364	0.194	0.180	0.205
					(1.72)	(2.21) *	(2.06) *	(2.30) *
Inflation (consumer prices, annual %)					-0.190	-0.159	-0.171	-0.166
					(-2.42) *	(-2.19) *	(-2.17) *	(-2.45) *
Financial Development (% of GDP)					0.751	1.546	1.599	1.598
					(0.67)	(1.41)	(1.45)	(1.44)
Institutionalised Democracy dummy (0-10)						1.003	1.258	1.070
						(0.57)	(0.65)	(0.58)
Total natural resources rents (% of GDP)							1.266	1.306
							(0.85)	(0.95)
Resources rents * FDI from the North								-0.266
								(-0.80)
Resources rents * FDI from the South								-0.044
								(-0.26)
Fixed effects	year	year	year	year	year	year	year	year
Observations	1,318	939	939	839	668	649	649	649
Adjusted R-squared	0.005	0.017	0.040	0.043	0.028	0.054	0.055	0.053

Note: Robust t-statistics in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. All independent variables are one year lags.

TABLE 3: GDP per capita – natural logarithms	Regression Model							
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8
Constant	-3.665	-26.202	14.890	73.823	175.158	175.793	151.960	140.317
	(-1.99) *	(-2.15) *	(0.12)	(0.71)	(1.48)	(1.47)	(1.51)	(1.49)
Initial GDP per capita (1985)	0.966	0.685	0.686	0.614	0.651	0.659	0.688	0.682
	(11.38) **	(8.01) **	(8.00) **	(7.31) **	(6.41) **	(6.40) **	(5.95) **	(5.93) **
FDI inflows from the North (% of GDP)	0.310	0.897	-7.752	-12.844	-23.785	-23.837	-21.092	-20.952
	(2.77) **	(2.88) **	(-0.42)	(-0.88)	(-1.52)	(-1.50)	(-1.54)	(-1.54)
FDI inflows from the South (% of GDP)	0.528	3.719	4.534	-1.882	-9.554	-9.632	-7.748	-5.524
	(1.93) +	(2.25) *	(0.53)	(-0.28)	(-1.20)	(-1.20)	(-1.20)	(-0.89)
Gross capital formation (% of GDP)		1.177	1.176	0.974	0.476	0.477	0.474	0.432
		(2.13) *	(2.10) *	(2.91) **	(2.33) *	(2.34) *	(2.24) *	(2.02) *
Labour participation rate (% of population ages 15+)		-0.505	-0.500	-0.562	-0.923	-0.923	-0.919	-0.938
		(-1.24)	(-1.22)	(-1.28)	(-2.14) *	(-2.12) *	(-2.16) *	(-2.20)
Government final consumption expenditure (% of GDP)		0.021	0.024	-0.137	0.039	0.041	0.031	0.034
		(0.08)	(0.09)	(-0.50)	(0.32)	(0.33)	(0.24)	(0.26)
Schooling (secondary, gross enrolment %)		0.544	-10.587	-24.353	-49.378	-49.661	-42.994	-42.713
		(4.37) **	(-0.30)	(-0.84)	(-1.46)	(-1.45)	(-1.48)	(-1.63)
Schooling * FDI from the North			2.344	3.670	6.561	6.577	5.825	6.036
			(0.47)	(0.92)	(1.53)	(1.51)	(1.55)	(1.75) +
Schooling * FDI from the South			-0.224	1.125	3.060	3.098	2.549	2.274
			(-0.09)	(0.56)	(1.26)	(1.27)	(1.27)	(1.19)
Trade (% of GDP)				0.540	0.379	0.372	0.381	0.378
				(2.76) **	(2.71) **	(2.70) **	(2.79) **	(2.75) **
Debt outstanding and disbursed (% of GDP)					-0.311	-0.311	-0.301	-0.307
					(-4.07) **	(-4.11) **	(-3.82) **	(-3.88) **
Inflation (consumer prices, annual %)					0.015	0.014	0.022	0.030
					(0.11)	(0.10)	(0.17)	(0.22)
Financial Development (% of GDP)					0.008	0.007	-0.013	-0.012
					(0.11)	(0.09)	(-0.17)	(-0.15)
Institutionalised Democracy dummy (0-10)						0.020	0.011	0.014
						(0.39)	(0.20)	(0.25)
Total natural resources rents (% of GDP)							-0.064	4.592
							(-0.72)	(0.41)
Resources rents * FDI from the North								-0.351
								(-0.22)
Resources rents * FDI from the South								-0.559
								(-0.68)
Fixed effects	year	year	year	year	year	year	year	year
Observations	1,372	993	993	888	787	787	787	787
Adjusted R-squared	0.612	0.738	0.738	0.769	0.854	0.854	0.856	0.856

Note: Robust t-statistics in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%. All independent variables are one year lags.

TABLE 4: Total FDI inflows (% of GDP)	Regression Model	
	4.1	4.2
Constant	2.109	0.514
	(2.92) **	(0.51)
FDI inflows from the South (% of GDP)	0.270	0.270
	(1.68) +	(1.39)
Natural resources rents (% of GDP)	0.095	0.122
	(3.04) **	(2.74) **
Government final consumption expenditures (% of GDP)		0.039
		(0.93)
Institutionalised Democracy dummy (0-10)		0.039
		(0.60)
Inflation (consumer prices, annual %)		-0.000
		(-2.51) *
Schooling (secondary, gross enrolment %)		0.023
		(1.75) +
Initial GDP per capita (1985)	-0.001	-0.001
	(-1.75) +	(-2.92) **
Fixed effects	year	year
Observations	1,374	1,083
Adjusted R-squared	0.262	0.325
Note: Robust t-statistics in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%.		

The results of the 4th model on the complementarity of FDI inflows from North and South are shown in Table 4. Both model 4.1 and 4.2 give a coefficient of 0.27 for FDI inflows from the South, indicating that a 1 per cent point increase in FDI inflows from the South results in a 0.27 per cent point increase in total FDI inflows. For model 4.1, this result is significant at a 10 per cent level, but adding the additional control variables in model 4.2 reduces the significance of the coefficient for *South*. Hence these models provide only a weak but non-robust indication for the substitutability of FDI inflows from the North and South to Africa. Evidence from other research, indicating a complementary relationship, is thus not supported (Aykut & Ratha, 2007; Aleksynska & Havrylchyk, 2013). The expected complementary relationship due to different investment behaviour in developing countries in general may lack support in the case of Africa due to the concentration in the primary sector: investors from the North and South may compete to have access to natural resources.

Indeed, the natural resources rents have a positive significant effect on the total amount of FDI inflows: both models show that a 1 per cent increase in the rents from resources results in an increase of FDI inflows with about 0.1 per cent point. This indicates the importance of the abundance of natural resources being a major pull factor for FDI in Africa, confirming previous findings for developing countries by Aykut and Ratha (2004), and Anyanwu (2011) for the case of Africa.

Concerning the other control variables, the initial GDP per capita has a significantly negative effect on FDI inflows. An possible explanation for this result is that there may be no significant differences between the absolute amounts of FDI inflows to relatively high-income economies and low-income economies in Africa, which thus would result in a negative effect of the initial GDP on FDI inflows relative to GDP.

Finally, government expenditures and the quality of the institutionalised democracy do not significantly affect the FDI inflows in Africa. As expected, inflation has a negative effect, and the level of schooling positively affects the total amount of FDI inflows relative to GDP, which is in line with the findings of Blomström and Kokko (2003), and Borensztein et al. (1998), respectively.

4.5 Overview empirical analysis

Summarising the results of the growth models, the sample of Africa shows a positive relationship between FDI and economic growth: increasing inflows from the North as well as from the South result in a higher level of GDP per capita on average. This positive growth effect is according to the expectations and hence the first hypothesis, as proposed in Section 4.1, is not rejected.

Furthermore this sample gives an indication that the growth-effect of South-South FDI inflows may be larger than the growth-effects of North-South flows, but this finding is only significant in one of the three models, and hence not robust enough to support the second hypothesis convincingly.

Concerning the interactions of the FDI inflows from North and South with the level of schooling and the amount of resources rents, the growth models give no significant results. Hence neither the theory about the host-country's absorption capability, nor the expected importance of increasing natural resources rents is supported by these findings.

Regarding the control variables included in the growth analysis, the overall results show that:

- there is no sign of convergence amongst African economies, in fact the results support divergence;
- the level of schooling positively affects economic development;
- more (openness to) trade results in a higher level of GDP per capita;
- high inflation has a negative growth-effect, the findings on debt are inconclusive;
- the quality of the institutionalised democracy has a positive but non-robust effect on the level of economic development.

The addition analysis on the complementarity of FDI inflows from the North and South shows a weak indication of those investments being substitutes, but the results are not robust. Furthermore this analysis does confirm the expected importance of natural resources as a major pull factor for FDI flows to Africa.

5. Conclusion

South-South cooperation is well and truly a phenomenon of the contemporary world: it reshapes the global economic balance and relationships. The exchange of resources, technology and knowledge outside the sphere of traditional advanced economies significantly increased in size and magnitude during the last decades, and affects economic growth worldwide. This paper investigated the effects of FDI on the economic development of developing countries, distinguishing inflows stemming from the advanced North and the developing South.

Since the introduction of the new endogenous growth theory, it is widely recognised that FDI contributes to long-term growth through the generation of increasing returns in production via externalities and productivity spillovers. Theory on the direct effects and spillovers from FDI indicates that, on the one hand, the growth-effects from South-South FDI are still small, since it mainly focuses on vertical investments in the natural resource-sector, but on the other hand that FDI from the South is more familiar with local markets and technologies in developing host-economies, which may increase their spillovers. This paper empirically shows that South-South flows indeed positively affect economic growth in the case of Africa, even though these investments are still mainly concentrated in the extractive sector. African developing countries seem to gain from the increased cooperation with emerging economies, e.g. the BRICs. The sometimes state-owned MNCs from the South introduced the phenomenon of packed investments by investing in large infrastructure projects in exchange for access to natural resources. This and other innovative approaches create an enormous growth-potential for investments between developing countries. Although this paper only finds a weak indication on the growth-effects of South-South flows being larger than those from North-South flows, further research in the upcoming decade is likely to find that FDI from emerging economies boost both home- and host-countries in the global South. In this paper only aggregate data are used in the analysis, due to data availability; further research is needed on a sector level to investigate the different effects of North-South and South-South FDI in Africa.

Recent empirical research stresses the importance of a minimum level of development to be able to absorb the technological transfer, the development of the host-country's financial system, institutional quality, trade policy regimes, etc. The empirics in Africa, however, provide no significant support for these factors, except from trade: although it shows the importance of schooling for economic development, no evidence is found concerning the addition growth-effect of FDI when schooling is sufficiently high.

Developing countries in Africa and elsewhere find themselves in a new position: the possess increasing bargaining position towards competing potential investors, in particular when they are resource abundant. However, since theory and empirics show that gains from mere vertical

investments in the extractive industries are limited, governments should try to stipulate for additional investments in infrastructure and schooling of local workers. Further on, since investments in consumer markets, especially by MNCs from the South, induce larger spillovers and hence economic gains, countries should invest in attracting more market-seeking FDI that enhances their productivity and contributes to their economic and social development. Concerning the latter, MNCs from the South lag behind Northern investors by incorporation social governance standards and care for environmental effects of their activities. Northern investors in turn may learn from the innovative approaches of these MNCs from the South, since the latter do not expand due to firm specific assets, but indeed to obtain them.

The regional focus of South-South FDI, as well as the fact that it tends to invest in countries with a low level of investments, brings new opportunities for the less and least developed economies. However, further research is needed on the impact of South-South cooperation on development in a broader perspective, regarding not only economic growth, but also social development, income equality and progress towards the 2015 Millennium Development Goals. In the end, both in advanced and developing economies, the economy is not an end in itself, but a serving part of an interconnected society.

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Appendix

A.1 – List of FDI host-countries in Africa

North Africa	**Sub-Saharan Africa**			
Algeria	***Central Africa***	***East Africa***	***Southern Africa***	***West Africa***
Egypt, Arab Republic	Cameroon	Burundi	Angola	Benin
Libya	Central African Republic	Comoros	Botswana	Burkina Faso
Morocco	Chad	Congo, Democratic Republic of the	Lesotho	Cape Verde
Tunisia	Congo, Republic of the	Djibouti	Malawi	Côte d'Ivoire
	Equatorial Guinea	Eritrea *	Mauritius	Gambia, The
	Gabon	Ethiopia *	Mozambique	Ghana
	Sao Tome and Principe	Kenya	Namibia	Guinea
		Madagascar	South Africa	Guinea-Bissau
		Rwanda	Swaziland	Liberia
		Seychelles	Zambia	Mali
		Somalia	Zimbabwe	Mauritania
		South Sudan **		Niger
		Sudan **		Nigeria
		Tanzania, United Republic of		Saint Helena ***
		Uganda		Senegal
				Sierra Leone
				Togo

** In 1991 Ethiopia was split into Ethiopia and Eritrea. ** In 2011 Sudan was split into Sudan and South Sudan. *** St.Helena is left out of the analysis due to lack of data.*

A.2 – List of OECD countries, "the North"

Europe		**America**	**Asia / Pacific**
Austria	Italy	Canada	Australia
Belgium	Luxembourg	Chile *	Israel
Czech Republic	Netherlands	Mexico *	Japan
Denmark	Norway	United States	Korea
Estonia	Poland		New Zealand
Finland	Portugal		Turkey
France	Slovak Republic		
Germany	Slovenia		
Greece	Spain		
Hungary	Sweden		
Iceland	Switzerland		
Ireland	United Kingdom		

** In the empirical analysis Chile and Mexico are excluded from "the North", since these countries classify as developing economies.*

A.3 – Descriptive statistics

	mean	median	maximum	minimum	standard deviation	skewness	kurtosis	number of observations
GDPpc	1,532.929	597.536	16,635.280	80.942	2,346.954	3.008	13.444	1,424
FDI 'North'	0.833	0.012	196.789	-185.322	10.203	4.619	224.475	1,451
FDI 'South'	2.338	0.891	199.649	-151.533	11.080	0.750	131.378	1,451
Capital	14.914	15.559	73.565	-80.963	12.639	-0.605	10.077	1,267
Labour	67.676	69.350	90.400	41.900	12.723	-0.105	1.830	1,178
Gov. Expenditures	16.016	14.300	69.500	2.000	7.694	1.587	7.393	1,255
Schooling	34.805	28.060	124.75	3.283	24.958	1.298	4.413	1,424
Trade	71.874	64.128	275.232	10.831	36.062	1.224	4.982	1,205
Debt	97.065	68.938	1,829.488	3.218	131.013	7.043	73.592	1,285
Inflation	50.649	7.000	23,773.100	-17.600	714.033	30.642	1,007.264	1,214
Financial Development	20.649	14.060	167.536	0.815	21.743	3.096	15.662	1,162
Inst. Democracy	2.526	1	10	0	3.188	0.902	2.315	1,364
Nat. Resources Rents	11.085	4.693	218.886	0.000	17.396	3.860	28.759	1,374

A.4 – Correlation matrix

	GDPpc	FDI 'North'	FDI 'South'	Capital	Labour	Gov. Exp.	Schooling	Trade	Debt	Inflation	Financial Dev.	Democracy	Resources Rents
GDPpc	1												
FDI 'North'	0.042	1											
FDI 'South'	-0.092	-0.852	1										
Capital	0.295	-0.109	-0.110	1									
Labour	-0.437	-0.022	-0.004	-0.214	1								
Gov. Exp.	0.143	0.024	-0.025	0.315	-0.086	1							
Schooling	0.706	0.050	-0.018	0.254	-0.511	0.237	1						
Trade	0.340	0.059	0.092	0.232	-0.255	0.418	0.398	1					
Debt	-0.271	-0.186	0.322	-0.286	0.084	-0.214	-0.296	-0.042	1				
Inflation	-0.077	-0.003	0.005	-0.131	0.111	-0.020	-0.032	0.019	0.117	1			
Financial Dev.	0.471	0.055	-0.077	0.163	-0.376	0.227	0.640	0.140	-0.225	-0.003	1		
Democracy	0.163	0.068	-0.031	0.151	-0.017	0.246	0.323	0.249	-0.062	-0.072	0.291	1	
Resources Rents	0.297	-0.006	0.060	-0.048	-0.106	-0.061	-0.005	0.187	0.063	0.120	-0.170	-0.237	1