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Sectoral FDI and the Real Exchange Rate: The Role of Financial Development

Coletta Frenzel Baudisch*

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Abstract

Increasing FDI inflows into a booming sector resulting in an appreciation of the real exchange rate may entail further capital inflows and greater appreciation pressure on the real exchange rate up to an abrupt reversal of the capital (Botta, 2015). The macroeconomic instability of such boom-and-bust cycles is detrimental to economic growth, as is the appreciated real exchange rate. This paper applies dynamic system generalized methods of moments (GMM) estimation techniques to empirically find different effects of foreign direct investment (FDI) inflows into the main economic sectors on the real exchange rate in a panel of 66 developing and developed economies. While the effect of FDI in the primary sector appears to be insignificant, FDI in the manufacturing and in the service sector lead to a real depreciation and a real appreciation respectively. Furthermore, evidence suggests that financial sector development may help in dampening the real exchange rate movements induced by FDI in the latter two sectors, as well as distinctly attenuates the real appreciation effect of other capital inflows. Hence, deep financial markets seem to contribute to the mitigation of macroeconomic instability in consequence of capital inflows.

Keywords: Capital Inflows, Sectoral Foreign Direct Investment, Financial Market Development, Dynamic Panel Data Models

JEL Classification: C33, E44, F21, F32

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1. Introduction

After a continuous increase in global capital flows up to the financial crisis in 2008, financial globalization slowed down with global capital flows being less than half of their value from 2000-2007 in the subsequent period from 2008-2012 (James, McLoughlin, & Rankin, 2014). The main driver behind this development appears to be a strong decline in bank lending between advanced economies primarily in Europe.[1] The development looks different for global flows of foreign direct investment (FDI)[2] relative to global GDP, which have steadily grown since the 1980s up to the crisis and have remained stable over the two periods mentioned, emphasizing their relevance. With respect to the sectoral allocation of FDI flows, FDI in the primary sector accounted for 7% of global FDI stock in 2012 as in previous years, dominated by the extractive industry.[3] FDI in the service sector amounted to 63% and FDI in the manufacturing sector to 26% of global FDI stock, further expanding the global shift from manufacturing to service FDI.

International capital mobility may foster economic development in emerging economies with previously constrained access to external finance, but at the same time lay the foundation for macroeconomic instability (Ocampo, 2013). The benefits of capital inflows for the destination economies like capital accumulation, increased efficiency, deeper local financial markets, and enhanced risk sharing for investors, face risks like welfare losses because of distortions in consumption and production behaviour, as well as abrupt reversibility of foreign capital. FDI scores best in entailing most benefits and least risks when compared to portfolio investment and bank lending (Reisen & Soto, 2001). It is based on long-term considerations and supposed to be growth-promoting in the host economy, whereas other capital inflows are more volatile due to their short-term nature and hence less reliable as a source of external finance. However, this classification starts being questioned with respect to the changing structure of international financial markets as rising South-South FDI flows and falling bank-intermediated flows due to tighter regulations (Eichengreen, Gupta, & Masetti, 2017). While theoretical contributions assess the impact of aggregate FDI on economic growth as positive, the picture is mixed in empirical studies analysing this nexus (Iamsiraroj & Ulubaşoğlu, 2015). This inconsistent

[1] In international accounts, e.g. the balance of payments and the international investment position, five functional categories of capital flows exist: (1) direct investment, (2) portfolio investment, (3) other investment, (4) financial derivatives and (5) reserve assets (IMF, 2013). Bank lending falls under other investments.

[2] "Direct investment is a category of cross-border investment made by a resident in one economy (the direct investor) with the objective of establishing a lasting interest in an enterprise (the direct investment enterprise) that is resident in an economy other than that of the direct investor." (OECD, 2008) Once the threshold of 10% voting power in a direct investment enterprise is held by the direct investor, the lasting interest counts as proven.

[3] 2012 is the latest year for which sectoral data are available. All figures stated in this paragraph are taken from UNCTAD (2015, 2016).

outcome is possibly due to the use of aggregated FDI data, although the channels through which FDI affect growth, namely technology transfer and spillover effects, differ strongly across sectors: while primary sector FDI have negative repercussions on economic growth, the opposite is true for FDI in the secondary sector, and the effect of FDI inflows in the tertiary sector on economic growth is ambiguous (Alfaro, 2003).

Associated with the FDI – growth – nexus is the possible real exchange rate appreciation through capital inflows, which endangers the international competitiveness of host economies and potentially leads to macroeconomic destabilization, a phenomenon known as Dutch Disease. Empirical investigations show an inconsistent picture of the appreciation effects of different types of capital inflows. While portfolio and other investment apparently induce a real exchange rate appreciation, the result is less clear for aggregate FDI inflows. Saborowski (2009) finds a real appreciation following FDI and other capital inflows. Heng (2011) confirms the latter effect, but finds no appreciation effect of FDI inflows. Both, Saborowski (2009) and Heng (2011) examine aggregate FDI data which appears problematic in the discussion of the capital inflows – real exchange rate – nexus due to sectoral differences in the macroeconomic effects of FDI (Alfaro, 2003; Aykut & Sayek, 2007). The present study intends to shed further light on this nexus by disaggregating FDI inflows into the three main sectors, namely the primary sector consisting of mining and quarrying as well as agriculture and fishing, the secondary sector consisting of the manufacturing industry, and the tertiary sector covering services. This approach may contribute to a better understanding of the so far inconclusive picture of the relationship between FDI inflows and the real exchange rate. Differences in the effects of sectoral FDI on the real exchange rate may be at the bottom of this ambiguity. To fill this gap, the aim of the present study is an empirical analysis of the real exchange rate effects of sectoral FDI inflows.

According to Botta (2015), a natural resource boom increases resource FDI in a small open developing economy, resulting in a real appreciation and then attracting other short-term capital inflows into the economy[4]. The real exchange rate continues to appreciate until foreign investors pull their capital off. The author labels this cycle leading to macroeconomic instability as a financial Dutch Disease (Botta, 2015). Since financial development reduces the appreciative effect of large FDI inflows (Saborowski, 2009) and/ or of other capital inflows

[4] The model assumes the small open developing economy to dispose of a relevant endowment of natural resources which may attract investment from abroad. Additionally, the economy is assumed to be open to free trade and integrated into international capital markets. Finally, monetary policy pursues inflation targeting to stabilize prices. (Botta, 2015)

(Heng, 2011), the subsequent boom-and-bust cycle could turn out smoother in the presence of efficient financial systems. In general, as soon as the financial sector is in the position to allocate capital inflows to productive investments, the real exchange rate appreciation turns out weaker and macroeconomic management is more stable. Hence, the possible cushioning of a boom-and-bust cycle in the aftermath of increasing FDI in a booming sector by means of financial development is also part of this examination.

The contribution of this paper to the discussion about capital inflows and the real exchange rate is twofold. First, this study revisits the relationship between FDI and the real exchange rate by analysing FDI inflows into the main economic sectors. Second, to the best of my knowledge, this is the first study to investigate the potentially weakening role of financial development in the relationship between sectoral FDI inflows and the real exchange rate. Regarding the varying effects of FDI in different sectors on economic growth, and the relationship between the real exchange rate, macroeconomic stability and economic growth, this research provides new insight into the discussion. More precisely, it investigates (i) whether FDI in the primary, secondary and tertiary sector lead to a real exchange rate deviation, followed by an examination of (ii) the possibly dampening effect of well-functioning financial systems on the link between sectoral FDI and real exchange rate appreciation or rather depreciation. In addition, the role of financial development in smoothing a boom-and-bust cycle following a boom in FDI, and hence in avoiding a financial Dutch Disease is examined by (iii) an analysis of the real appreciation effects of other capital inflows and (iv) the contribution of financial development in this context.

In this study, I use dynamic panel data estimation methods to analyse a panel dataset built for the purpose of this examination. It comprises of FDI inflow data on a sectoral level for 66 developing and developed economies. I do not find any significant real exchange rate reaction to FDI inflows into the primary sector, but can confirm a real exchange rate depreciation following FDI inflows into the manufacturing sector, as well as a real exchange rate appreciation following FDI inflows into the service sector. Thus, these results may help to explain the mixed picture in the literature about the effects of aggregate FDI inflows on the real exchange rate. Financial development seems to cushion the depreciation effect of FDI targeted at manufacturing, whereas a similar dampening effect for FDI in the service sector is ambiguous. Furthermore, I find a distinct appreciation effect of other capital inflows on the real exchange rate which is mitigated by efficient financial systems.

The rest of this paper is organized as follows: section 2 reviews the literature regarding the connection between capital inflows and economic growth to carve out the relevance of a

sectoral approach, as well as of capital inflows and the real exchange rate with a focus on FDI. Section 3 presents the data and section 4 describes the econometric methodology used. Section 5 has the estimation results together with robustness checks. Section 6 concludes.

2. Related Literature

According to neoclassical growth models, FDI promotes growth by financing capital formation through an increased capital stock. Due to diminishing returns to capital, FDI contributes in the same way to short-run growth as domestic investment, until a new steady-state is reached. Endogenous growth models encompass long-run growth effects of FDI, excessing the growth effects of domestic investment (Herzer, Klasen, & others, 2008). FDI enhances the endogenous growth rate via technological spillover effects,[5] as theoretically and empirically shown by Baldwin, Braconier, and Forslid (2005). In a selective survey, Hansen and Rand (2006) find most FDI-growth studies to point at a positive association between FDI and growth with the exception of the study of Carkovic and Levine (2002). In their own analysis of 31 developing countries, FDI appears to be growth promoting in accordance with the expectation in neoclassical growth models. In opposition to this, Herzer et al. (2008) find neither a long-term, nor a short-term impact of FDI on growth in a sample of 28 developing countries. Recently, Herzer (2012) even shows a negative effect of FDI on growth in developing economies, but with large differences across countries. His results suggest a negative association between the growth effect of FDI and primary-export dependence, even though some resource-abundant economies as Chile, Indonesia and India, which succeed in export diversification, show positive growth effects of FDI. Hence, the reduced effectiveness of FDI in countries dependent on resource-exports cannot be generalized.

Possible channels through which FDI affects growth are capital accumulation[6] and knowledge spillovers[7] (De Mello Jr, 1997). Javorcik (2004) differentiates between a horizontal and two vertical spillover channels which are associated either with backward or forward linkages. While multinational affiliates and domestic firms compete directly in the horizontal scenario,

[5] The ability of developing economies to adopt and implement new technologies from developed countries appears as a determinant of economic growth in endogenous growth models (Hermes & Lensink, 2003).

[6] Since FDI in the form of M&A stand for a mere change in the ownership structure of an already existing enterprise, they do not necessarily contribute to domestic capital accumulation (OECD, 2008).

[7] Greenfield FDI have to make an effort to set up a local network after entering an economy, why they possibly generate less knowledge spillover than M&A (Javorcik, 2004).

they engage in a different and possibly more productive relationship in the vertical set-up by selling or buying intermediate goods to or from domestic firms. In her empirical study with a focus on manufacturing companies, positive spillover effects from FDI with backward linkages in the host country are confirmed, whereas no positive spillover is found for FDI with forward linkages or for horizontal FDI. These results match the expectation: Multinational enterprises most likely will not disclose any information regarding e.g. technologies to direct competitors, whereas their interest in providing local suppliers with additional knowledge is high. For host economies to benefit from spillover effects of FDI, they need to dispose of the absorptive capacities necessary. These capacities include sufficient levels of income (Blomstrom, Lipsey and Zejan 1994), of trade openness (Balasubramanyam, Salisu, & Sapsford, 1996) and of human capital (Borensztein, De Gregorio, & Lee, 1998). The results of Li and Liu (2005) encompass a direct and indirect growth-promoting effect of FDI, with the latter being determined by human capital and the ability to absorb new technologies. Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004) find a threshold level of financial development as precondition for a positive FDI-growth relationship (similar Azman-Saini, Law, & Ahmad, 2010; Baharumshah, Slesman, & Devadason, 2015). Prasad, Rajan, & Subramanian (2007) analyse capital flows from nonindustrial to industrial economies with a resulting positive correlation between a current account surplus (net capital outflow in a given period, or positive difference of domestic saving and domestic investment) and economic growth in the nonindustrial economies. However, the authors find no evidence of a growth enhancing effect of capital inflows. A possible reason lies within insufficient absorptive capacities of developing economies for large capital inflows, i.e. the insufficient level of financial development.

Considering the scope of this research, financial development receives special attention in its capacity to absorb capital inflows. Levine (2005) organizes financial systems into five functions. First, the provision of ex ante information about possible investments and the corresponding allocation of capital constitutes a function of financial systems. Financial intermediaries that exert well the task of gathering investment information are able to channel scarce resources towards the most promising enterprises, hereby providing for the most efficient allocation of capital (Greenwood & Jovanovic, 1990). Hence, efficient financial markets avoid the flow of capital into non-productive, merely demand-increasing sectors, hereby dampening a possible real exchange rate appreciation. Second, financial systems monitor investments and perform corporate governance. By monitoring, shareholders and creditors may motivate managers to maximize firm value and to efficiently allocate resources to its most productive use. Third, financial systems enable generally risk-averse savers to diversify the risk in their

investments. Therefore, a well-functioning financial system diversifies portfolios by including riskier, high-return investment projects, which in turn affect long-run growth for example by accelerated technological change through more innovation. As a fourth function of financial systems, Levine (2005) states the mobilization and pooling of savings. By facilitating this, investment indivisibilities may no longer present an obstacle to execution. Finally, the facilitation of the exchange of goods and services is the fifth function of financial systems. Depending on the quality in providing these functions, a financial system turns out to be well-developed or not. Saving and investment decisions hinge upon these functions, consequently fostering growth.

However, empirical findings about the relevance of absorptive capacities are inconclusive. Several studies (e.g. Carkovic & Levine, 2002; Hansen & Rand, 2006; Herzer et al., 2008) reject a relationship between these capacities and a growth impact of FDI. Farkas (2012) on the other hand finds in order of importance first financial development and second a threshold level of human capital to contribute to a growth-enhancing effect of FDI, complemented by a relative scarcity in natural resources. Hermes and Lensink (2003) also come to the conclusion that financial development is a prerequisite for the positive impact of FDI on growth because of the facilitated absorption of technological spillover effects.

The still missing consensus about the impact of FDI on economic growth may lie in the predominance of studies using aggregate instead of sectoral data. Certainly, the level of FDI matters, but so does the sectoral composition of FDI (Alfaro, 2003). Whereas direct investment in the manufacturing sector comes with numerous possible linkages to the rest of the economy, the situation is very different for direct investment in the primary sector with scarce interactions with resident enterprises and for direct investment in the service sector with less possibilities for backward linkages (Aykut & Sayek, 2007). In case of the service sector, an explanation of its ambiguous impact on economic growth (Alfaro, 2003; Aykut & Sayek, 2007) lies in the nature of investments in its different sub-sectors. For example, FDI in infrastructure predominantly happen as M&A with no boost for total domestic investment. Nevertheless, banks owned by foreign investors usually stand for a better quality of services coming along with a positive impact on the local financial system. Even though Aykut and Sayek (2007) assess no link of FDI in financial services to local economic growth, Poelhekke (2015) shows a positive association between FDI of banks and non-financial FDI of enterprises from the same home economy, indicating effects on the real economy and output. The real side of the economy also benefits from improved financial systems which may be triggered through strengthening

of institutions by financial sector FDI. Home economies of international banks investing abroad are often endowed with well-regulated financial systems. Therefore, the direct investors are interested in and able to support the creation of a better institutional environment for improved financial systems in the host economies (Goldberg, 2004). While FDI in the manufacturing sector positively affect economic growth, the opposite is true for FDI in the primary sector. A growing primary sector may prove disadvantageous for economic growth because of crowding out effects that can be specified as Dutch Disease caused by real exchange rate appreciation.

According to the Dutch Disease literature, large capital inflows following a natural resource boom, or similarly large official aid inflows (Prati & Tressel, 2006), cause a real appreciation in the recipient economy because of domestic expenditures shifting towards the non-tradable (service) sector, hereby increasing the relative price of non-tradable goods to tradable goods, which equals the real exchange rate (Corden & Neary, 1982). The real exchange rate appreciation proves harmful to the tradable (industrial) sector by rendering its products non-competitive on the international market. Lower exports and current account deterioration are the consequences, leading to an ongoing de-industrialization and possibly macroeconomic instability as well as lower growth in the long run (Sachs & Warner, 1995). However, the empirical results on the relationship between capital inflows and the real exchange rate are mixed. Non-FDI inflows apparently lead to an appreciation of the real exchange rate in the recipient economies to a significant greater extent than FDI inflows (Athukorala & Rajapatirana, 2003; Saborowski, 2009). Combes, Kinda, and Plane (2012) even find a seven times greater impact of portfolio investment on the appreciation of the real exchange rate than of FDI, possibly because of the productivity enhancing rather than merely demand increasing nature of direct investments. Further empirical analyses of developing economies suggest a real appreciation caused by all capital flows except for FDI[8] (Bakardzhieva, Ben Naceur, & Kamar, 2010; Heng, 2011). On the other hand, Lartey (2007) finds an increase of FDI inflows to Sub-Saharan Africa to appreciate the real exchange rate, with no such effect for other private capital inflows, but with an even stronger effect of official aid inflows.

Furthermore, FDI targeting a booming resource sector can initiate a boom–and–bust cycle (Botta, 2015). An appreciation, which is at first nominal and then real, induced by long-term FDI in a flexible exchange rate regime, reduces the perceived country risk, hereby rendering

[8] The region of Central and Eastern European Countries is found to be an exception to the positive relationship between aggregate capital inflows and real exchange rate appreciation probably because of the dominance of FDI flows into this region (Bakardzhieva et al., 2010).

the economy more attractive to portfolio investment, leading to further appreciation pressure. Once the foreign investors assess the mounting foreign debt and appreciated exchange rate as unsustainable, the process is reversed, capital is being detracted and the exchange rate drops. Macroeconomic instability results out of such a cycle. Botta (2015) labels this process as financial Dutch Disease, because a national account framework evokes the traditional Dutch Disease outcome. Hereby, he extends the seminal work of Corden and Neary (1982), who developed their three-sector model by "ignoring the monetary implications". In case this cycle hits the financial sector badly, a long period of stagnation might result.

However, Saborowski (2009) finds no clear-cut evidence for an appreciating effect of FDI on the real exchange rate as there is for other capital inflows. The concentration of FDI inflows in the traded goods sector serves as an explanation because of a weaker impact on the relative price of non-tradable and tradable goods, a measure for the real exchange rate. But the global trend of increasing service sector FDI (Doytch & Uctum, 2011) questions whether this explanation still holds. Saborowski (2009) argues that "an efficient and well-regulated financial system" including deep financial and capital markets attenuates the real exchange rate appreciation effect of FDI inflows, but not the stronger appreciative impact of other capital inflows. Due to the spillover effects of FDI, the absorption of direct investment inflows is more urgent in comparison to other capital inflows. The deepening of financial markets together with advanced financial institutions ameliorates the absorptive capacities of host economies, hereby weakening the link between capital inflows and real exchange rate appreciation (Otker-Robe, Polanski, Topf, & Vávra, 2007). In opposition to these results, Heng (2011) finds financial development to dampen the real exchange rate appreciation following other capital inflows into developing countries[9], also because he cannot assess any real appreciation following FDI inflows in the first step. As soon as the financial sector is in the position to allocate capital inflows to productive investments, the real exchange rate appreciates less and macroeconomic management is more stable. Furthermore, the relevance of absorptive capacities for the productive use of capital inflows is assigned to other capital inflows instead of FDI in his analysis. Heng and Saborowski (2011; 2009) both assess a flexible exchange rate regime as helpful in dampening a real exchange rate appreciation triggered by capital inflows.[10] In line

[9] The 84 countries in the sample of Saborowski (2009) comprise of developing and developed economies, whereas Heng (2011) analyses a sample of 78 developing economies only.

[10] However, the choice of the exchange rate regime is also intertwined with the level of financial development: productivity growth of less financially developed countries exhibits a negative relationship with the flexibility of the exchange rate (Aghion, Bacchetta, Ranciere, & Rogoff, 2009). This connection is not detectable in most financially developed countries. Hence, a rigid exchange rate regime may involve growth benefits for economies at a low level of financial development especially under consideration of possible terms-of-trade shocks in

with their arguments, the assumption of dampening effects of financial development on the appreciation of the real exchange rate following capital inflows appears justified.

The risks associated with a real exchange rate appreciation for growth perspectives can be summarized by competitive levels and no excessive volatility of the real exchange rate facilitating economic growth (Eichengreen, 2007). The view of an undervalued exchange rate to act as a growth engine is closely associated with the export–led growth literature[11], manifesting itself in the tradable sector being the operative channel of growth enhancing effects (Magud & Sosa, 2010). Other studies identify different operative channels like higher domestic savings rates together with higher investment rates through which an undervalued real exchange rate promotes growth (Levy-Yeyati & Sturzenegger, 2007; Montiel & Servén, 2009). Rodrik (2008) names macroeconomic instability[12] as the most common reason why an overvaluation is associated with slow growth since economies with overvalued currencies often are short of foreign currencies, face rent seeking and corruption, and incur large current account deficits and balance of payments crises. The Washington Consensus View agrees on growth-opposing effects of real exchange rate overvaluation, but disagrees on the effect of undervaluation. Accordingly, any misalignment of the real exchange rate presents a distortion that negatively affects growth (Berg & Miao, 2010).

However, the real exchange rate appreciation induced by capital inflows does not have to represent any misalignment: Magud and Sosa (2010) connect the literature on the Dutch Disease and on the relationship between the real exchange rate and economic growth in search of the "missing link" between these two concepts. Even though the literature agrees mostly on the pernicious effect of overvaluation on economic growth, the Dutch Disease does not necessarily imply an overvaluation because it is an equilibrium phenomenon caused by a

resource-rich economies affecting productivity growth. Whereas such shocks can be absorbed by flexible exchange rates in financially developed countries, the same is true for fixed exchange rates in financially less developed countries (Aghion et al., 2009).

[11] Export-led growth replaced the import-substitution strategy as a paradigm in development economics in the 1970s. It focuses on foreign markets and the beneficial effects of economic openness. Economies that employed export-led growth strategies appear to show high growth rates typically associated with growth in total factor productivity (Melo & Robinson, 1992). However, it is an open question whether export-led growth is still an effective strategy for growth considering for example global slow-downs in demand as after the financial crisis (Tang, Lai, & Ozturk, 2015).

[12] Macroeconomic instability results from bad macroeconomic management composed of fiscal and monetary policy, debt management and especially exchange rate policy. The adverse effects of macroeconomic instability on investment and growth are strongly influenced by the volatility of the real exchange rate (Bleaney, 1996). Sirimaneetham and Temple (2009) conclude, that "sound policy is a necessary but not sufficient condition for rapid growth". A threshold of macroeconomic stability emerges in their study with investment having a strong impact on output in relatively stable economies.

change in the underlying fundamentals. The negative implication of a contraction of the tradable sector does not necessarily outweigh the benefits of capital inflows. The authors suggest policies to mitigate the spending effect after a capital inflow shock to dampen the increase in aggregate demand and to avoid overheating. Their ideas consist for example of a sovereign wealth fund to accumulate foreign assets, tightening of fiscal policies and the improvement of financial regulation to constrain credit booms and to render boom–and–bust cycle more unlikely.

The different strands of literature discussed in this section emphasize (i) the interconnection of capital inflows, economic growth, and real exchange rate behaviour, and (ii) the relevance of financial development in the capacity of FDI–receiving economies to absorb technological spillover effects and to dampen the appreciation pressure on the real exchange rate. This literature provides the basis for the main argument of this study, which is that well–developed financial markets and institutions should dampen the real exchange rate amplitudes provoked by sectoral FDI, as well as by other capital inflows, hereby smoothing boom–and-bust–cycles following a sectoral boom, going hand in hand with less macroeconomic instability and therefore better growth perspectives.

3. Data and Empirical Approach

The data set constructed for this study consists of 66 emerging and developing, as well as industrial economies. Data requests cover the time span from 1995 until 2015 with a focus on the period after 1999. Hereby, the transition phase from planned economies to market economies in Eastern Europe in the late 1980s and early 1990s is excluded. In the case of Asian economies, the availability of the relevant data starting in 2000 ensures the exclusion of the Asian financial crisis with many regional economies changing their exchange rate regime in 1997. On top of this, financial sector development strongly advanced in the 1990s (Rajan & Zingales, 2003), stressing the importance of the adjacent period for an analysis of the effects of well–functioning financial systems. With regard to the hypothesis of this study, which states a dampening effect of financial development on the link between sectoral FDI and a real exchange rate reaction, the collection of aggregate FDI data is insufficient. However, the availability of sectoral FDI data differs strongly across countries, leading to an unbalanced panel. For some European economies such as Latvia, Lithuania and Croatia, FDI inflow data were not available in US Dollar, rendering a currency conversion necessary by means of period average exchange rates taken from the European Central Bank and the Central Bank of the Republic of Lithuania.

Sector-level FDI data come from six different sources, which are presented in order of their frequency[13] as a data source in this panel. First, the Organisation for Economic Co-operation and Development (OECD) provides detailed FDI information for its member countries and supplies the majority of FDI data in our sample. Since FDI data registered according to the Benchmark Definition of Foreign Direct Investment 4 (BMD 4) (OECD, 2008) is only available from 2005 onwards in the OECD database, the data request covers BMD 3 (OECD, 1996) FDI data registered by industry under the terms of the International Standard Industrial Classification (ISIC) Rev.3. Second, the International Trade Center (ITC) offers sectoral FDI data, whereas its data merely serve as an extension to data from other sources in most cases. ITC data is consistent with the ISIC Rev. 3 classification, too. Third, the Economic Commission for Latin America and the Caribbean (ECLAC) publishes sectoral FDI inflow data for Latin American economies, while not giving any further information on the underlying industrial classification. In its FDI report from 2016, FDI are segregated into Natural Resources, Manufactures and Services. Fourth, the Vienna Institute for International Economic Studies (WIIW) serves as a source of sectoral FDI inflow data for Eastern and Central European economies, classified according to NACE Rev. 2. The basis for this European categorization is ISIC Rev. 4. Fifth, the Association of Southeast Asian Nations (ASEAN) provides sectoral FDI inflow data for Asian economies registered according to ISIC Rev. 4. The ASEAN Investment Report (ASEAN Secretariat, 2011) covers sectoral FDI data of the 10 member states for the period 2000 until 2010, while the 2010 data strongly deviates from the respective information in the ASEAN Investment Report 2012 (ASEAN Secretariat, 2013). Hence, the later report is the source of data covering the years 2010 and 2011, and the ASEAN FDI database provides sectoral FDI data ranging from 2012 until 2014. Sixth, the UNCTAD Investment country profiles display sectoral FDI inflow data. The individual reports give different indications of the underlying industrial classification. Additionally, some country sources were consulted to increase the panel which incorporates 110 countries at this stage.

After harmonizing the sectoral FDI data from all sources, three sectors are differentiated, with the primary sector comprising of codes A and B of ISIC Rev. 4, the secondary manufacturing sector under code C of this classification, and the tertiary sector under the remaining codes representing service-related industries such as construction, financial intermediation, real estate activities and others. Unallocated FDI inflows represent a fourth category which this research neglects in the analysis because of the chosen focus on sectoral differences. The respective

[13] Frequency refers to the number of countries a FDI source provides data for. The length of the time period covered is not considered.

variables are PRIMFDI, SECFDI, and TERTFDI. Furthermore, TOTALFDI stands for aggregate FDI data, each coming from the same source as the sectoral data. Besides direct investment, information on other capital inflows (OCI) is relevant for the analysis of Dutch Disease effects. OCI contain portfolio investment and other investment such as loans. All capital inflow variable, i.e. FDI and OCI, are defined as a share of GDP. Data on the real effective exchange rate (REER) as dependent variable stems from the IMF´s international financial statistics (IFS), the Bank for International Settlements (BIS), and some national sources. REERs are defined as the geometric weighted averages of bilateral exchange rates adjusted by relative consumer prices. An increase in the REER indicates an appreciation. The relevant information is available for 80 of the 110 economies of the sample, hereby significantly decreasing the sample size.

With regard to the various sources used to assemble the sectoral FDI database, quality checks are indispensable. Following Reinhardt & Dell'Erba (2013), a ratio between the total of FDI inflows as given by the sectoral sources and aggregate FDI inflows from IFS serves as reference value. In addition to their approach, another ratio is constructed that displays the congruence of the total of sectoral FDI inflows and aggregate FDI inflows from the World Bank's World Development Indicator (WDI) Database. I dropped observations for which both ratios are simultaneously either above 1.5 or below 0.66. Possible reasons for these deviations are either recent updates of the data which are not captured in the sectoral sources, no accordance between realized and approved FDI, or a missing component of FDI for individual countries as reinvested earnings (Reinhardt & Dell'Erba, 2013). This approach together with the data availability of other explanatory variables reduces the sample to its final size of 66 countries. Appendix A has a list of all countries in the panel.

This study makes use of two variables measuring financial sector development. First, the ratio of liquid liabilities to GDP (LLGDP) stands for financial market depth and is widely used in the corresponding literature. Precisely, LLGDP indicates the sum of currency outside banks, demand and interest-bearing liabilities of banks as well as non-bank financial intermediaries. Broad money works as a proxy for this variable and is retrieved from the WDI database. However, it does not properly display the functions a well-developed financial system should satisfy such as risk management or gathering of investment information. Second, the variable CREDIT taken from the Financial Structure Database (Beck, Demirgüç-Kunt, & Levine, 2000) may work as a remedy for these shortcomings, standing for credit granted to the private sector over GDP by banks and other financial corporations. A better performance in financial

functions is seen as the basis for an extension of credits to the private sector as opposed to credits granted only to the public sector (Levine, 2005). Nevertheless, Saborowski (2009) points at the downsides of CREDIT in measuring the development of financial systems as an increase of CREDIT following capital inflows might testify to the opposite, the failure of establishing more investment opportunities following capital inflows. Furthermore, private-sector credit provided by banks does not necessarily lead to the correct conclusions about the quality of financial systems considering the rise of shadow banking in industrial economies for example (IMF, 2015). Since LLGDP and CREDIT both merely serve as proxies for financial development, none of it covers the complete set of the five functions of financial systems (Levine, 2005). When it comes to the interpretation of the results, this deficiency should be taken into account.

The standard set of control variables in theoretical and empirical models trying to explain movements of the real exchange rate consists of the terms of trade, trade openness and productivity (Combes et al., 2012). I follow this approach in the baseline regressions, complemented by capital outflows. First, the variable TOT stands for the terms of trade, defined as export value over import value. A deterioration of the national terms of trade which translates into higher prices of imported goods typically leads to a real exchange rate depreciation, with the opposite result of a terms of trade improvement. The income effect of a terms of trade amelioration increases domestic demand, making a real exchange rate appreciation, i.e. an increase in the price of non-tradable goods necessary to dampen the corresponding demand and to direct it to the tradable sector (Edwards, 1989). On the other hand, relatively lower import prices, defining a terms of trade improvement, may also lead to substitution effects and an accompanying real exchange rate depreciation. Second, the variable TRADE represents trade openness and is defined as the sum of exports and imports of goods and services as a share of GDP. The income and substitution effects mentioned when presenting TOT may also account for a real depreciation following trade liberalization, and accordingly a real appreciation following trade restrictions: the imposition of import tariffs increases the domestic price of imported goods, hereby deteriorating the terms of trade. A negative income effect pushes down the demand for non-tradables, directing the real exchange rate towards a depreciation. On the other hand, the substitution effect leads to an increase in the demand for non-tradables, increasing the price ratio of non-tradables to tradables also known as the real exchange rate. Under the assumption of a dominating substitution effect, the conclusion implies a real appreciation following trade restrictions (Edwards, 1989). Third, GDP per capita relative to the weighted average GDP of a country's main trading partners captures the productivity gap

(PROD), which is supposed to proxy the Balassa-Samuelson effect. The main trading partners consist of the 10 economies with the highest share in bilateral trade with the economy in question over the course of the period of observation. Following Combes et al. (2012), the calculation of weights considers the respective shares at the end of the relevant observation period to shift the focus on the competitive situation in the most recent years. This procedure allows for an appropriate representation in this sample starting in the mid 1990s of the increasing relevance of then emerging trading partners as China or India. According to the Balassa-Samuelson effect, an increase in the productivity of the industrial sector comes along with higher wages, attracting workers from the non-tradable sector, hereby putting pressure on the wage structure of the latter sector (Combes et al., 2012). The relative price of non-tradables increases, translating into an appreciation of the real exchange rate. Ricci, Milesi-Ferretti and Lee (2013) point at the downsides of a GDP per capita based measure of the Balassa-Samuelson effect. If the productivity in both the non-tradable as well as the tradable sector increases equally, the real exchange rate would not be altered. Hence, they suggest a sectoral breakdown of productivity measures possibly fitting well the sectoral research approach of this study. However, their measure does not cover the whole sample in this analysis. Fourth, the variable ASSETS measures the ratio of net outward investment of residents to GDP. The capital inflow variables size only net inward investment by non-residents fitting the research approach of financial development efficiently allocating capital inflows. The precondition of no ex ante defined use of the capital inflows does probably not hold for capital invested abroad by residents returning to the economy (Saborowski, 2009), why the model incorporates capital outflows into the set of control variables.

With respect to the inconclusive results of similar analyses of appreciation as well as moderation effects (Heng, 2011; Saborowski, 2009), this study checks the robustness of the baseline model using a different set of control variables which is also commonly applied in empirical real exchange rate models (Lartey, 2007). First, TRADE is dropped from the regression, and replaced by GCON which stands for government consumption and includes the final consumption expenditure of the general government as a percentage of GDP. The reason for its inclusion lies in the relevance of fiscal policy for macroeconomic stabilization. While fiscal contraction may work as a remedy against appreciation pressure induced by capital inflows, fiscal expansion, i.e. an increase in government expenditure, may raise aggregate demand, hereby increasing interest rates that draw the attention of foreign investors, resulting in an increase in demand for domestic currency which translates into a nominal appreciation followed by a real appreciation of the exchange rate according to the Mundell—Fleming model.

Nevertheless, empirical studies find a puzzling real exchange rate depreciation after positive shocks to government expenditure in advanced economies (Ravn, Schmitt-Grohé, & Uribe, 2012). Again, the sector the government chooses to spend money on probably decides about the direction of the impact of the increased spending on the real exchange rate. A focus of spending on tradable and hence industrial goods could foster a real depreciation with the opposite being true for spending concentrated on non-tradable goods (Lartey, 2007). Second, the model incorporates the control variable excess money growth (EXMG) defined as the difference between growth in M2 and GDP growth to represent the stance of monetary policies regarding foreign exchange market interventions following capital inflows. In a fixed exchange rate regime, the central bank purchases the excessive inflows to stabilize the nominal exchange rate at the target level. But the growing monetary base and the for that reason also increasing domestic money supply is mostly reflected in higher prices of non-tradable goods, leading to inflationary tendencies and an appreciation of the real exchange rate. Without attempts of the central bank to sterilize the effects of capital inflows on money supply, capital inflows pose a starting point of this causal chain. But in consideration of the interest rate raising effects of sterilization measures as open market operations, this point may seem unavoidable, anyhow (Athukorala & Rajapatirana, 2003). Third, the regressions include a variable to control for financial openness (KAOPEN). Such measures can be split into de jure and de facto measures, while the likely correlation with the main explanatory variables capital flows turns the latter inapplicable: net capital flows often serve as a proxy for de facto measurement of financial openness. This study applies the Chinn-Ito index (Chinn & Ito, 2006) which attempts to grasp the intensity of capital controls and which is widely available.

Appendix B has the definitions and sources of the variables used in this research.

4. Econometric Methodology

The following linear dynamic panel model is formulated for an empirical examination:

$$REER_{it} = \beta_1 + \alpha REER_{it-1} + \beta_2\, INFLOW_{it} + \beta_3(FD_{it} * INFLOW_{it}) + \beta_4 Z_{it} + \eta_i + \varepsilon_{it} \qquad (1)$$

where REER is the log of the real effective exchange rate, the vector INFLOW covers all capital inflow related variables as the sectoral FDI variables and OCI, FD has the financial development variables, Z includes the control variables, η captures the time-invariant individual specific effect and ε is the error term. The main econometric concern in an analysis of the real exchange rate consists of the potential endogeneity among explanatory variables.

With respect to the likely correlation between the real exchange rate in the same as well as in previous periods and capital inflows, the empirical model needs to address this issue. Furthermore, real exchange rates are persistent, rendering the incorporation of their lagged values necessary for a correct model specification. But the lagged dependent variable does not fulfil the requirement of strict exogeneity[14], which is an assumption in fixed effects estimation. First differencing the model and subsequently applying instrumental variables represents a solution to this concern in the literature. A first differenced version of equation (1) is given below, eliminating fixed effects and the constant term:

$$\Delta REER_{it} = \alpha \Delta REER_{it-1} + \beta_2 \, \Delta INFLOW_{it} + \beta_3 \, \Delta(FD_{it} * INFLOW_{it}) + \beta_4 \Delta Z_{it} + \Delta\varepsilon_{it} \quad (2)$$

Anderson and Hsiao (1982) propose the twice lagged dependent variable as an instrument for the first difference of the once lagged dependent variable, which in the case of equation (2) is $REER_{it-2}$ for $\Delta REER_{it-1}$. It serves as an ideal instrument due its high correlation with the differenced term, defined as $REER_{it-1} - REER_{it-2}$, and no correlation with the differenced error term $\Delta\varepsilon_{it}$, equalling $\varepsilon_{it} - \varepsilon_{it-1}$. However, the approach does not take advantage of all moment conditions available, rendering it consistent but not implicitly efficient. Arellano and Bond (1991) developed the difference GMM estimator first suggested by Holtz-Eakin et al. (1988), adding an additional feasible instrument for each forward period. It allows for the joint endogeneity of all explanatory variables. But the estimator comes with the shortcoming of the requirement for the model to be differenced, hereby eliminating cross-country information and keeping only the variation over time within units in the sample. Additionally, the performance of the estimator may suffer from instrument weakness in case of individual series having near unit root properties. To overcome these limitations, Blundell and Bond (1998) developed the system GMM estimator on the basis of the work of Arellano and Bover (1995). The system estimator is a combination of the regression in differences and the regression in levels by adding lagged differences of the dependent variable as well as of endogenous and exogenous regressors to the level instruments of the difference GMM estimator. Besides the possible inclusion of information on cross-country variation, it does overcome small sample bias and inaccuracy of the difference estimator especially in the presence of highly persistent data, hence recommending itself for its application in the context of an examination of the real exchange rate. Endogeneity among explanatory variables, which the system GMM estimator tackles

[14] Strict exogeneity requires the expectation of the error term in a given period to be zero conditional on observations of the regressor in all periods. This assumption is more restrictive than the contemporaneous exogeneity assumption of the error term in a given period to be zero conditional on the observation of the regressor in the same period.

might also appear between the central financial development variable and the capital inflow variables. However, this study only uses banking sector development indicators as opposed to stock market development indicators. FDI and the latter reciprocally influence each other, while evidence for the former indicator and FDI is inconclusive (Soumaré & Tchana, 2015), hereby rendering this particular endogeneity issue less critical in this context.

The regressions are run using the two-step system GMM estimator. Following the finite-sample correction by Windmeijer (2005), the analysis applies robust standard errors to avoid downward bias. Three indicators provide an indication of the validity of the econometric model and of the appropriate control for the likely weak endogeneity of the explanatory variables. First, the Hansen J-test of overidentifying restrictions tests the null of joint validity of all instruments. Hence, the corresponding p-value should not lie near zero, whereas implausibly good p-values of 1.000 may hint at instrument proliferation (Roodman, 2009). All regressions meet this requirement. Second, from this derives the concern about too many instruments that may weaken the specification tests, hereby making invalid results look valid. Roodman (2009) recommends either to limit the number of lags used as instruments instead of using all lags available, or to collapse the instrument matrix by combining the instruments through addition into smaller sets. This study applies both approaches to confine the instrument count which should not exceed the number of panel groups, i.e. countries in this examination, as a rule of thumb. Third, the Arellano-Bond test checks for autocorrelation in the idiosyncractic disturbance term to ensure valid instruments (Roodman, 2006). Its null hypothesis claims no serial autocorrelation what is rejected up to the third lag in this examination. Hence, this study applies lags starting from the fourth lag onward because smaller lags are found to be serially correlated in the idiosyncratic disturbance term.

5. Results

5.1 Effects of Capital Inflows on the Real Exchange Rate

Table 1 shows the results of two-step system GMM estimations, regressing the log of the real exchange rate on its own past values and on capital inflows. Control variables are the logs of TOT, PROD and TRADE, as well as capital outflows, i.e. ASSETS.

<< insert table 1 >>

Regression 1 contains both TOTALFDI and OCI, while regressions 2 and 3 each include only one type of inflows at a time. Regressions 4 to 6 cover one sectoral FDI inflow variable

respectively, as well as OCI as control. The variable OCI shows the expected sign through all regressions and is significant in all cases except for regression 4, which is also true for ASSETS. Additionally, ASSETS differs from its expected sign and is insignificant in regression 3 possibly due to the omission of OCI. Therefore, capital inflows other than FDI seem to cause a real exchange rate appreciation and all capital outflows including FDI abroad appear to be followed by a real exchange rate depreciation. More precisely, the results suggest that a one percentage point increase in OCI leads to a 0.54 percent appreciation in the real exchange rate at the 5 percent significance level. Previous studies found similar appreciation effects of 0.55-0.56 percent (Athukorala & Rajapatirana, 2003; Heng, 2011). Considering the sample mean of 6% for portfolio and other investment inflows over GDP (see Appendix C for summary statistics of all variables), this result is not only statistically, but also economically significant. The coefficient estimate on TOTALFDI inflows is insignificant in regression 1, contributing to the inconsistent results of previous examinations. This outcome persists when dropping OCI from the model in regression 3. The coefficient on PRIMFDI in regression 4 is insignificant, too. The picture changes when it comes to SECFDI, i.e. manufacturing investment. Regression 5 shows that a one percentage point increase in SECFDI brings about a 1.57 percent depreciation in the real exchange rate at the 1 percent significance level. This result is in line with the explanation in the literature for a depreciating effect of aggregate FDI on the real exchange rate due to its focus on the traded goods sector (e.g. Athukorala & Rajapatirana, 2003). Finally, TERTFDI in regression 6 has a positive impact on the real exchange rate at the 5 percent significance level, with a one percentage point increase in TERTFDI leading to a 0.52 percent real appreciation. Hence, the insignificant coefficient on TOTALFDI appears to be the result of the negative effect of SECFDI and the positive effect of TERTFDI cancelling each other out and possibly explaining the inconsistent picture in the literature on the FDI – real exchange rate – nexus. Depending on the sample selection, the effect of FDI in one sector may prevail and steer the result for aggregate FDI.[15] Appendix D covers the distribution of the sectoral FDI inflows in this sample, with an expected focus on service sector FDI.

<< insert table 2 >>

When splitting the sample into emerging and advanced economies by the classification of the World Economic Outlook (IMF, 2016) and repeating the regressions in table 2, only the positive coefficient on OCI remains significant in both subsamples. However, its magnitude drops by

[15] Regressions run without the United States in the sample show very similar results to the ones presented in table 1.

more than half for the advanced economies, suggesting that a higher development status facilitates the efficient absorption of capital inflows. This argument also applies to the outcome for emerging economies, where the coefficient on OCI increases, i.e. the real appreciation following other capital inflows turns out greater in less developed economies. PRIMFDI turns significant at the 10 percent level in the group of 38 emerging economies with a surprising negative coefficient. The apparently ensuing real depreciation is the opposite of the implication of theoretical considerations, especially with regard to the financial Dutch Disease framework. However, the framework´s assumption of a relevant endowment with natural resources only applies to 42% of the countries in the emerging economies subsample when surpassing a threshold of 20% of resource exports over total exports defines resource-richness. Further investigations into this relationship seem appropriate, leaving room for future research. The remaining two sectoral FDI inflow variables do not impact the real exchange rate in a statistically significant manner within the emerging economies. In the group of 28 advanced economies, none of the sectoral FDI inflows show statistical relevance for movements of the real exchange rate in this subsample. Only 21% of the advanced economies fulfil the criterion for resource-richness stated above, turning FDI into the primary sector less meaningful, what may explain the insignificant result as opposed to the group of emerging economies. Interestingly, a one percentage point increase in TERTFDI proposed a 0.44 percent appreciation of the real exchange rate at the 1 percent significance level in an earlier version of the regression when the Balassa-Samuelson effect was captured by GDP per capita following Heng (2011), which may be attributed to the predominance of FDI in the service sector in advanced economies. Replacing this control variable with the more sophisticated control of the productivity gap between an economy and its main trading partners leads to a consistently insignificant coefficient on TERTFDI in the group of advanced economies, while the terms of trade turn to impact the real exchange rate significantly at the 5 percent level.

<< insert table 3 >>

Table 3 shows the regression results of the econometric model using different control variables to check the robustness of the baseline results. Following Heng (2011), TRADE is dropped in exchange for EXMG, GCON and KAOPEN. Confirming the results from the baseline model, OCI is significantly positive in all regressions except for regression 4 with FDI inflows into the primary sector as an explanatory variable. Furthermore, its coefficients are continuously greater than in the baseline regressions of table 1. Similarly, for ASSETS, greater negative coefficients

and at minimum equally high significance levels result in comparison to the outcomes of the baseline model. The pattern concerning signs and significance throughout the several FDI variables endorses the baseline results shown in table 1. As before in the baseline model, PRIMFDI remains insignificant even with different control variables, finally failing to reject the null. Hence, in a mixed panel of developing and developed, as well as resource-rich and resource-poor economies, the assumed appreciation effect of FDI in the primary sector on the real exchange rate cannot be revealed. This outcome contradicts the theory of reinforced Dutch Disease effects by means of FDI inflows due to abundant natural resources. However, this interpretation needs to be taken with precaution since the globally relatively stable share of primary FDI is most dynamic in Africa with for example large growth rates in greenfield FDI projects in mining and quarrying in 2014 (UNCTAD, 2015). However, African economies represent just about 6% of this sample, and merely fourth and deeper lags of the variables serve as instruments in the analysis, why the recent agitation in the primary sector cannot be captured sufficiently. To supplement this argument, only one third of the economies in the sample meet the definition of resource-abundance, which is the first basic feature of the macroeconomic dynamics of a financial Dutch Disease (Botta, 2015). The evidence for a depreciative effect of SECFDI on the real exchange rate remains at 5 percent significance level in regression 5, slightly increasing its magnitude from a one percentage point increase of the variable causing a 1.56 percent depreciation in the baseline model to a 1.66 percent depreciation in the model using a different set of controls. An increase by one percentage point of FDI in the service sector in regression 6 of table 3 appears to lead to a 0.88 percent appreciation of the real exchange rate at the 5 percent significance level as compared to a 0.52 percent appreciation at the 5 percent significance level in regression 6 in table 1.

5.2 The Role of Financial Development

Table 4 shows the results of the baseline regression supplemented by an interaction term between LLGDP as a proxy for financial development and a capital inflow variable respectively. To enable comparisons between the direct effects and the interaction effects, the relevant variables have been z-standardized, i.e. after subtracting the sample mean they were divided by their standard deviation, each under consideration of the number of observations in the relevant regression. Through this procedure, the variables in question have mean 0 and standard deviation 1. The suffix ‘std’ in the variable name allows their identification in the

output tables.[16] Hence, table 4 contains a partial repetition of the regressions in table 1 with standardized variables (columns 1, 3, 5) supplemented by regressions including the interaction term (columns 2, 4, 6).

<< insert table 4 >>

Interacting OCI with LLGDP in column 2 results in a significantly negative coefficient, translating into an attenuating effect of financial development on the appreciation effect of portfolio and other investment inflows on the real exchange rate for average values of financial development. In case of high financial development, a one-unit increase of OCI results in a real appreciation by 3.3% as opposed to the higher appreciation by 5.7% when not controlled for financial development. Consistently, at low levels of financial development, a one-unit increase of OCI appreciates the real exchange rate by 9.4%, exceeding the direct effect. This result is in opposition to the effects of Saborowski (2009), but in line with the outcomes of Heng (2011). Furthermore, capital outflows become insignificant when controlling for financial development. Hence, financial development seems to cushion the overall effect of capital flows on the real exchange rate. The insignificance of TOTALFDI and PRIMFDI in table 1 determines their omission in the analysis of dampening effects through financial development. According to the results of regression 3, an increase of SECFDI by one standard deviation depreciates the real exchange rate by 2.1% at the 5 percent significance level. Controlling for financial development in column 4, the main effect of SECFDI on the real exchange rate turns insignificant and changes the sign. However, the interaction term between SECFDI and LLGDP is significant at the 10 percent level, meaning that an increase of SECFDI by one standard deviation leads to a decrease of the dependent variable by 0.012 for average values of the financial development variable, i.e. a depreciation by 1.2%. This effect is considerably weaker than the direct effect of SECFDI in regression 3, translating into a dampening effect of financial development on real exchange rate movements induced by FDI in manufacturing. With high levels of financial development, the consequence of a one-unit increase of SECFDI is a reduction of the real exchange rate by 0.96%, i.e. clearly less than the direct effect in regression 3 and also less than the effect at average levels of financial development. Regression 5 shows that the increase of TERTFDI by one standard deviation increases the dependent variable by 2.1%. Both, the direct effect of TERTFDI as well as the interaction term of TERTFDI and LLGDP in regression 6 are insignificant. Hence, when controlled for financial

[16] For the sake of clarity, I will use the variable names as previously introduced and not refer to them as VARIABLE_std in the remarks.

development, FDI in the tertiary sector do not influence the real exchange rate anymore. To sum the results up, a cushioning effect of financial development on the relationship between capital inflows and the real exchange rate is very pronounced for OCI, also clear for SECFDI and only weak for TERTFDI.

When changing the financial development indicator from LLGDP to CREDIT in table 5, the pattern resulting of the inclusion of interaction terms confirms the results shown in the previous regression table 4 for average values of financial development only. The inclusion of CREDIT leads to a distinct increase in the magnitude and significance of the direct effect of OCI on the real exchange rate. The direct effect of SECFDI turns insignificant when controlling for financial development as it does the corresponding regression in table 4, but it remains negative as opposed to a changed sign in the regression using the LLGDP indicator. The alterations in the direct effects when controlling for financial development via CREDIT have consequences for the real exchange rate movements in the cases of high or low levels of financial development, deviating from the results when controlling via LLGDP. However, a reason for these differing outcomes may lie in the possible inappropriateness of the variable CREDIT as a proxy for financial development in this context as already mentioned.

<< insert table 5>>

<<Insert table 6>>

The inclusion of an interaction between the capital inflow variables and LLGDP into the regressions using the alternative set of controls in table 6 confirms the dampening effect of financial development on appreciation pressure induced by OCI. The coefficients of the interaction terms are identical with -0.03 in the robustness check in regression 2 of table 6 and in the basis regression 2 of table 4. Again, the method of z-standardization facilitates a comparison between the effects with and without the interaction term. When adding the interaction term between SECFDI and LLGDP in regression 4, an increase of SECFDI by one standard deviation causes a depreciation by 0.9% for average values of financial development also resembling the corresponding effect in the basis regression 4 of table 4 with an ensuing 1.2% real depreciation. The implication of a rise by one standard deviation of TERTFDI surpasses that of the standardized baseline model (regression 5 in table 4) with a subsequent real appreciation by 3.3% instead of 2.1%, again confirming the direction and statistical and economical significance of the effect. However, the interaction term in regression 6 is insignificant while the direct effect of TERTFDI remains significant, suggesting that financial

development does not influence the real appreciation effect of FDI in the service sector in this model.

6. Conclusions

Macroeconomic destabilization due to real exchange rate appreciation resulting from capital inflows may jeopardize their desirable growth-enhancing impact. However, the empirical evidence about this relationship is mixed, why the present research addresses this question from a new perspective: Instead of an analysis of aggregate capital inflows, the effects of sectoral FDI inflows on the real exchange rate are at the centre of this investigation. It reveals different consequences of FDI inflows on the real exchange rate depending on the sector targeted. First, FDI inflows in the primary sector (mining and quarrying, as well as agriculture and fishing) do not influence the real exchange rate in a mixed panel, while a real depreciation following FDI inflows in the primary sector seems to occur in developing economies. This result surprises since the increased demand for non-tradable goods following capital inflows into the natural resource sector leads to the expectation of a real appreciation according to the Dutch Disease model with the spending effect following capital inflows causing a real appreciation. However, the mixed panel in this analysis does not comply for example with the assumptions in the model of a financial Dutch Disease (Botta, 2015). Second, FDI inflows in the secondary sector (manufacturing) empirically show the theoretically expected effect of an ensuing depreciation of the real exchange rate due to increased demand for industrial, i.e. tradable goods. Third, FDI inflows in the tertiary sector (services) have an appreciative effect on the real exchange rate, hereby also confirming theoretical predictions considering the (so far) non-tradable nature of services. This outcome for an analysis of the complete sample seems to be driven by service sector FDI in advanced economies. The evidence provided ambiguously corresponds to the results of studies about the relationship between sectoral FDI and economic growth (Alfaro, 2003; Aykut & Sayek, 2007). More precisely, only the effects of FDI inflows into the secondary sector match with a resulting real depreciation and increased economic growth endorsing the corresponding link in the theory (Eichengreen, 2007). The negative effect of FDI inflows into the primary sector on economic growth faces no impact of these inflows on the real exchange rate, hereby failing to confirm classical Dutch Disease effects. The ambiguous effect of FDI inflows into the service sector on economic growth opposes an ensuing real appreciation which rather raises the expectation of negative growth effects. However, many industrial economies have moved on from industrialisation towards service-based economies, why an increased

demand for non-tradable goods or services may at the same time foster growth and result in real appreciation.

The short-term nature of other capital inflows as bank loans and international portfolio investments and the lacking link to domestic production lead to the theoretical presumption of an ensuing real appreciation. Empirically, this component of capital flows shows a clear appreciative impact on the real exchange rate in this panel, confirming further appreciation pressure in boom phases with increasing capital inflows.

Financial development enables the efficient and effective absorption of capital inflows. This study finds a distinct attenuation of the appreciative impact of other capital inflows as portfolio investment and bank loans on the real exchange rate, hereby endorsing this hypothesis and previous results (Heng, 2011). The dampening effect of a well-functioning financial system on real exchange rate movements following capital inflows can also be shown for FDI inflows in manufacturing, but is only weakly detectable for FDI inflows into the service sector. The development of a deep and well-regulated financial system seems to cushion possible boom and bust cycles in the aftermath of increasing FDI inflows into a booming sector. This is especially true considering that other capital inflows represent the majority of capital inflows (OCI represent 6% of GDP in this sample as opposed to FDI inflows of 4.6% of GDP) and may enhance the risk of macroeconomic destabilization even stronger than FDI inflows due to their heavy impact on the real exchange rate and their rather volatile nature. Hence, further financial development is the implication of this research for economies to benefit from the growth-promoting effects of capital inflows and to avoid macroeconomic turbulences.

Facing the challenges of data availability, future research in this field could illuminate the effect of FDI inflows into the primary sector on the real exchange rate with a focus on developing, resource-rich economies. Additionally, the sectoral disaggregation of capital inflows in the form of development finance in developing economies and their effects on the real exchange rate could be of interest to the discussion about Dutch Disease effects.

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Table 1: Impact of Sectoral FDI and OCI on the Real Exchange Rate, Baseline Model

	1	2	3	4	5	6
	Dependent variable: log(REER)					
logREER lagged	0.799***	0.835***	0.773***	0.863***	0.796***	0.758***
	(0.102)	(0.091)	(0.081)	(0.098)	(0.098)	(0.089)
TOTALFDI	-0.088		-0.181			
	(0.280)		(0.217)			
OCI	0.526**	0.538**		0.071	0.505***	0.357*
	(0.224)	(0.219)		(0.208)	(0.188)	(0.182)
PRIMFDI				-1.806		
				(2.171)		
SECFDI					-1.565***	
					(0.556)	
TERTFDI						0.515**
						(0.249)
ASSETS	-0.460**	-0.452**	0.005	0.026	-0.361**	-0.341*
	(0.202)	(0.178)	(0.044)	(0.219)	(0.137)	(0.173)
logTOT	0.029	0.034	0.002	0.050	0.019	0.013
	(0.025)	(0.025)	(0.015)	(0.047)	(0.019)	(0.019)
logPROD	0.006	0.006	0.003	-0.010	0.004	0.007*
	(0.050)	(0.005)	(0.003)	(0.007)	(0.005)	(0.004)
logTrade	0.029*	0.028*	0.006	0.002	0.030**	0.001
	(0.016)	(0.015)	(0.010)	(0.017)	(0.014)	(0.013)
Constant	0.675	0.486	1.024**	0.394	0.739	1.042**
	(0.464)	(0.4603)	(0.392)	(0.665)	(0.492)	(0.458)
Observations	575	575	575	529	527	536
No. of countries	66	66	66	65	64	65
No. of instruments	55	53	53	63	55	55
AR(2) pval	0.014	0.014	0.006	0.029	0.066	0.009
AR(3) pval	0.015	0.013	0.006	0.007	0.004	0.001
AR(4) pval	0.822	0.738	0.708	0.692	0.521	0.480
Hansen test pval	0.500	0.466	0.562	0.631	0.538	0.498

Notes: Regressions in all tables are run using the two-step system GMM estimation with Windmeijer (2005) small sample robust correction. Standard errors are in parentheses. The symbols ***, ** and * stand for statistical significance at the 1, 5 and 10 percent level respectively.

Table 2: Baseline Model split by development status

	Emerging Economies				Advanced Economies			
	1	2	3	4	5	6	7	8
	Dependent variable: log(REER)							
logREER lagged	0.590***	0.479***	0.827***	0.677***	0.797***	1.020**	0.338	1.033***
	(0.185)	(0.158)	(0.165)	(0.163)	(0.166)	(0.418)	(0.213)	(0.222)
TOTALFDI	-0.059				-0.114			
	(0.426)				(0.190)			
OCI	0.776**	0.410**	0.683**	0.317	0.191**	0.311	0.466***	0.239
	(0.311)	(0.190)	(0.295)	(0.350)	(0.092)	(0.226)	(0.157)	(0.338)
PRIMFDI		-1.005*				-0.739		
		(0.562)				9.036		
SECFDI			-0.551				-1.515	
			1.177				(0.959)	
TERTFDI				-0.116				0.345
				(0.489)				(0.317)
ASSETS	0.064	0.429	-0.418	-0.471	-0.175**	-0.246	-0.343**	-0.289
	(0.236)	(0.270)	(0.472)	(0.503)	(0.085)	(0.199)	(0.140)	(0.283)
logTOT	0.005	0.012	0.037	0.026	0.026	0.083	-0.056	0.091**
	(0.026)	(0.035)	(0.032)	(0.035)	(0.042)	(0.312)	(0.079)	(0.043)
logPROD	0.000	-0.010	-0.002	-0.001	0.037	0.017	0.010**	0.014
	(0.011)	(0.010)	(0.009)	(0.010)	(0.025)	(0.027)	(0.039)	(0.031)
logTrade	0.006	0.005	0.016	0.013	0.028	0.038	0.028	0.034
	(0.015)	(0.015)	(0.021)	(0.020)	(0.017)	(0.046)	(0.022)	(0.033)
Constant	1.815**	2.289***	0.554	1.312	0.692	-0.636	3.146**	-0.699
	(0.852)	(0.785)	(0.801)	(0.847)	(0.896)	(3.391)	(1.265)	(1.240)
Observations	335	309	302	305	240	220	225	231
No. of countries	38	38	36	37	28	27	28	28
No. of instruments	27	31	31	31	27	23	23	15
AR(2) pval	0.730	0.211	0.358	0.053	0.049	0.065	0.211	0.048
AR(3) pval	0.356	0.163	0.102	0.022	0.053	0.041	0.112	0.024
AR(4) pval	0.494	0.639	0.519	0.619	0.879	0.925	0.705	0.820
Hansen test pval	0.123	0.155	0.397	0.423	0.258	0.316	0.288	0.454

Table 3: Robustness Check (different control variables)

	1	2	3	4	5	6
	Dependent variable: log(REER)					
logREER lagged	0.844***	0.838***	0.756***	0.805***	0.782***	0.809***
	(0.091)	(0.093)	(0.064)	(0.100)	(0.085)	(0.115)
TOTALFDI	0.267		-0.172			
	(0.249)		(0.189)			
OCI	0.821***	0.754***		0.205	0.535**	0.717**
	(0.302)	(0.271)		(0.183)	(0.213)	(0.279)
PRIMFDI				-1.251		
				-2.097		
SECFDI					-1.662**	
					(0.743)	
TERTFDI						0.876**
						(0.384)
ASSETS	-0.771***	-0.699***	-0.059	-0.132	-0.409**	-0.717**
	(0.280)	(0.253)	(0.051)	(0.187)	(0.163)	(0.272)
logTOT	0.035	0.023	0.002	0.051	0.014	0.035
	(0.027)	(0.030)	(0.015)	(0.046)	(0.021)	(0.028)
logPROD	0.018	0.018*	0.004	-0.003	0.008	0.015*
	(0.011)	(0.009)	(0.004)	(0.008)	(0.008)	(0.008)
logGCON	-0.088*	-0.083**	-0.013	-0.036	-0.049*	-0.071**
	(0.046)	(0.037)	(0.012)	(0.028)	(0.028)	(0.029)
KAOPEN	0.005	0.005	0.004	0.004	0.005	0.006
	(0.005)	(0.005)	(0.003)	(0.005)	(0.004)	(0.005)
EXMG	-0.001**	-0.001**	-0.001*	-0.001*	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.809**	0.891**	1.165***	0.766	1.101***	0.913*
	(0.395)	(0.354)	(0.300)	(0.559)	(0.408)	(0.506)
Observations	544	544	544	501	498	507
No. of countries	66	66	66	64	64	65
No. of instruments	59	57	57	59	59	51
AR(2) pval	0.012	0.010	0.003	0.032	0.087	0.017
AR(3) pval	0.032	0.035	0.006	0.018	0.038	0.020
AR(4) pval	0.696	0.874	0.779	0.704	0.628	0.404
Hansen test pval	0.403	0.430	0.709	0.468	0.508	0.287

Table 4: Sectoral FDI, OCI and the Real Exchange Rate, inclusion of LLGDP

	1	2	3	4	5	6
	Dependent variable: log(REER)					
L.logREER	0.827***	0.872***	0.755***	0.854***	0.732***	0.673***
	(0.091)	(0.094)	(0.095)	(0.140)	(0.106)	(0.098)
TOTALFDI_std	0.003	0.003				
	(0.012)	(0.011)				
OCI_std	0.057**	0.064**	0.060***	0.062**	0.053**	0.046**
	(0.026)	(0.029)	(0.022)	(0.029)	(0.024)	(0.023)
OCI_std*LLGDP_std		-0.030*				
		(0.016)				
SECFDI_std			-0.021**	0.002		
			(0.008)	(0.014)		
SECFDI_std*LLGDP_std				-0.012*		
				(0.006)		
TERTFDI_std					0.021**	0.003
					(0.009)	(0.017)
TERTFDI_std*LLGDP_std						0.009
						(0.007)
ASSETS_std	-0.060**	-0.027	-0.051***	-0.052**	-0.059**	-0.053**
	(0.027)	(0.022)	(0.019)	(0.024)	(0.025)	(0.023)
logTOT	0.029	0.026	0.015	0.025	0.014	0.013
	(0.026)	(0.019)	(0.019)	(0.022)	(0.019)	(0.026)
logPROD	0.007	-0.004	0.007	0.005	0.008*	0.007
	(0.004)	(0.007)	(0.004)	(0.005)	(0.004)	(0.005)
logTrade	0.024	0.006	0.032**	0.019	0.005	0.007
	(0.015)	(0.015)	(0.013)	(0.015)	(0.014)	(0.016)
LLGDP_std		-0.003		0.004		0.004
		(0.005)		(0.005)		(0.005)
Constant	0.5634	0.449	0.924*	0.478	1.149**	1.412***
	(0.433)	(0.423)	(0.491)	(0.660)	(0.534)	(0.493)
Observations	549	549	503	503	512	512
No. of countries	66	66	64	64	65	65
No. of instruments	55	59	55	44	55	49
AR(2) pval	0.007	0.027	0.052	0.042	0.009	0.012
AR(3) pval	0.003	0.017	0.004	0.006	0.001	0.001
AR(4) pval	0.612	0.776	0.454	0.632	0.438	0.488
Hansen test pval	0.425	0.625	0.537	0.175	0.493	0.198

Table 5: Robustness check (inclusion of CREDIT)

	1	2	3	4	5	6
	Dependent variable: log(REER)					
L.logREER	0.811***	0.929***	0.828***	1.008***	0.758***	0.757***
	(0.115)	(0.210)	(0.090)	(0.207)	(0.092)	(0.102)
TOTALFDI_std	-0.006	-0.004				
	(0.014)	(0.011)				
OCI_std	0.069**	0.116**	0.068***	0.108***	0.052*	0.053*
	(0.032)	(0.045)	(0.025)	(0.037)	(0.027)	(0.028)
OCI_std#CREDIT_std		-0.010**				
		(0.004)				
SECFDI_std			-0.019**	-0.007		
			(0.009)	(0.015)		
SECFDI_std#CREDIT_std				-0.015**		
				(0.007)		
TERTFDI_std					0.020*	0.021
					(0.010)	(0.015)
TERTFDI_std#CREDIT_std						-0.006
						(0.008)
ASSETS_std	-0.066**	-0.100**	-0.057***	-0.090***	-0.054*	-0.054*
	(0.030)	(0.039)	(0.021)	(0.030)	(0.028)	(0.028)
logTOT	0.032	0.031	0.018	0.028	0.016	0.007
	(0.026)	(0.029)	(0.018)	(0.032)	(0.020)	(0.025)
logPROD	0.006	0.006	0.005	0.017*	0.007*	0.007
	(0.005)	(0.010)	(0.005)	(0.009)	(0.004)	(0.006)
logTrade	0.032*	0.040*	0.032**	0.052***	0.004	0.006
	(0.016)	(0.022)	(0.013)	(0.019)	(0.015)	(0.013)
CREDIT_std		0.001		-0.025*		0.002
		(0.010)		(0.015)		(0.005)
Constant	0.583	0.020	0.579	-0.371	1.026**	1.064**
	(0.507)	(1.007)	(0.465)	(0.938)	(0.491)	(0.500)
Observations	569	569	523	523	532	532
No. of countries	66	66	64	64	65	65
No. of instruments	55	39	55	44	55	49
AR(2) pval	0.014	0.055	0.068	0.048	0.010	0.010
AR(3) pval	0.007	0.050	0.004	0.017	0.001	0.001
AR(4) pval	0.840	0.956	0.546	0.886	0.468	0.465
Hansen test pval	0.496	0.227	0.539	0.151	0.342	0.255

Table 6: Robustness Check (different control variables, inclusion of LLGDP)

	1	2	3	4	5	6
	Dependent variable: log(REER)					
L.logREER	0.842***	0.878***	0.765***	0.810***	0.797***	0.718***
	(0.088)	(0.107)	(0.083)	(0.088)	(0.095)	(0.094)
TOTALFDI_std	0.014	0.015*				
	(0.011)	(0.009)				
OCI_std	0.099***	0.110***	0.064**	0.060**	0.091**	0.079***
	(0.035)	(0.041)	(0.025)	(0.025)	(0.038)	(0.025)
OCI_std#LLGDP_std		-0.029*				
		(0.017)				
SECFDI_std			-0.020**	-0.003		
			(0.009)	(0.011)		
SECFDI_std#LLGDP_std				-0.009*		
				(0.005)		
TERTFDI_std					0.033**	0.031*
					(0.013)	(0.016)
TERTFDI_std#LLGDP_std						-0.001
						(0.006)
	-					-
ASSETS_std	0.108***	-0.077**	-0.055**	-0.049**	-0.105**	0.088***
	(0.038)	(0.032)	(0.022)	(0.021)	(0.041)	(0.026)
logTOT	0.033	0.051**	0.012	0.020	0.030	0.040*
	(0.027)	(0.025)	(0.021)	(0.019)	(0.023)	(0.023)
logPROD	0.019*	0.006	0.008	0.005	0.018*	0.011*
	(0.010)	(0.009)	(0.007)	(0.006)	(0.009)	(0.006)
		-				
logGCON	-0.082**	0.099***	-0.044**	-0.050**	-0.064**	-0.057**
	(0.041)	(0.036)	(0.020)	(0.024)	(0.0297)	(0.024)
KAOPEN	0.004	0.006	0.004	0.005	0.004	0.005
	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)
			-	-	-	-
EXMG	-0.001*	-0.001**	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LLGDP_std		0.005		0.006		0.009
		(0.005)		(0.005)		(0.006)
Constant	0.814**	0.606	1.159***	0.929**	0.986**	1.277***
	(0.373)	(0.522)	(0.413)	(0.418)	(0.427)	(0.413)
Observations	544	544	498	498	507	507
No. of countries	66	66	64	64	65	65
No. of instruments	59	68	67	63	59	63
AR(2) pval	0.008	0.050	0.059	0.042	0.014	0.012
AR(3) pval	0.021	0.083	0.027	0.019	0.017	0.016
AR(4) pval	0.679	0.801	0.630	0.701	0.453	0.425
Hansen test pval	0.367	0.781	0.802	0.552	0.383	0.631

Appendix A: List of 66 economies in the sample

Countries	Resource exports/ total exports	Total resource rents in % of GDP*	GDP per capita, PPP (current international US Dollar)*	Classification according to WEO 2016	Time period covered
Argentina	11,63	3,60	18495,37	emerging/ developing	2001-2015
Armenia	44,14	2,75	7011,74	emerging/ developing	2005-2012
Australia	60,74	7,96	41029,89	advanced	2002-2012
Austria	6,69	0,22	43660,09	advanced	1998-2004
Azerbaijan	91,77	30,77	15112,96	emerging/ developing	2005-2009
Belgium	12,81	0,02	40617,24	advanced	2002-2011
Belize	26,44	3,66	7890,09	emerging/ developing	2005-2015
Bolivia	77,59	12,61	5593,62	emerging/ developing	2005-2015
Brazil	23,00	4,53	14149,13	emerging/ developing	2005-2015
Bulgaria	30,17	2,41	15195,35	emerging/ developing	2005-2015
Canada	33,65	3,18	41337,87	advanced	1995-2012
Chile	61,50	17,30	19384,90	emerging/ developing	2006-2013
Colombia	58,07	6,67	11324,40	emerging/ developing	2005-2015
Costa Rica	1,67	1,33	13226,73	emerging/ developing	2005-2015
Croatia	17,27	0,81	20266,40	emerging/ developing	2001-2009
Cyprus	14,00	0,05	32345,57	advanced	2005-2009
Czech Republic	5,15	0,65	28733,52	advanced	1995-2008
Denmark	9,73	1,41	43020,82	advanced	1995-2011
Dominican Republic	6,38	1,51	11234,58	emerging/ developing	2005-2015
Ecuador	55,60	12,55	9790,67	emerging/ developing	2005-2015
Egypt	39,49	10,40	9719,24	emerging/ developing	2006-2009
Estonia	16,20	0,92	24161,67	advanced	1999-2009
Fiji	1,88	1,84	7668,84	emerging/ developing	2005-2011
France	6,46	0,05	36845,49	advanced	1995-2012
Germany	5,29	0,15	41174,14	advanced	1995-2000
Greece	35,20	0,27	27765,21	advanced	2004-2012
Hungary	4,60	0,50	22187,97	emerging/ developing	1998-2005
Iceland	37,98	0,00	41458,21	advanced	1995-2006
Indonesia	34,22	7,05	8715,45	emerging/ developing	2000-2014
Ireland	1,80	0,14	48027,12	advanced	2000-2004
Israel	2,12	0,24	30541,79	advanced	2005-2013
Italy	6,18	0,13	35362,11	advanced	1995-2011
Kazakhstan	78,47	7,85	20781,72	emerging/ developing	2006-2015
Korea	10,15	0,03	30618,09	advanced	1995-2001
Kyrgyzstan	18,27	7,87	2868,64	emerging/ developing	2005-2011
Latvia	9,51	1,04	20022,29	advanced	2000-2015
Lithuania	22,92	0,47	22564,32	advanced	1999-2013

Countries	Resource exports/ total exports	Total resource rents in % of GDP*	GDP per capita, PPP (current international US Dollar)*	Classification according to WEO 2016	Time period covered
Macedonia	9,11	3,48	11451,46	emerging/ developing	2005-2011
Malaysia	19,90	9,04	21912,06	emerging/ developing	2000-2014
Mexico	16,63	5,33	15243,65	emerging/ developing	1995-2012
Morocco	13,19	3,15	6560,60	emerging/ developing	2005-2011
Netherlands	13,23	0,83	45872,92	advanced	1995-2003
Nicaragua	2,11	3,25	4269,46	emerging/ developing	2005-2015
Norway	71,73	9,05	60734,84	advanced	1995-2001
Pakistan	5,33	2,32	4366,92	emerging/ developing	2005-2014
Paraguay	17,14	2,12	7369,33	emerging/ developing	2007-2015
Philippines	7,68	2,66	5813,57	emerging/ developing	2000-2014
Poland	8,48	1,46	21461,43	emerging/ developing	1995-2012
Romania	10,26	1,75	17450,98	emerging/ developing	2005-2014
Russia	72,34	15,12	21471,53	emerging/ developing	2010-2014
Saudi Arabia	87,98	43,95	45620,05	emerging/ developing	2005-2010
Singapore	17,46	0,00	72184,06	advanced	2000-2014
Slovakia	7,69	0,32	25119,96	advanced	1998-2008
Slovenia	9,02	0,26	28851,19	advanced	2006-2011
Spain	9,00	0,07	32697,70	advanced	1995-2012
Sweden	11,32	0,77	42971,39	advanced	1995-2010
Switzerland	5,98	0,01	54849,62	advanced	1996-2003
Thailand	6,50	2,42	13672,54	emerging/ developing	2000-2010
Trinidad and Tobago	36,65	16,55	30980,62	emerging/ developing	2005-2011
Tunisia	15,63	5,95	10178,32	emerging/ developing	2001-2014
Turkey	8,28	0,52	16974,88	emerging/ developing	1995-2013
Uganda	4,26	9,45	1579,72	emerging/ developing	2005-2014
United Kingdom	15,41	0,85	37118,24	advanced	1995-2001
United States	11,45	1,04	50289,58	advanced	1995-2012
Uruguay	2,39	1,45	17150,71	emerging/ developing	2005-2015
Venezuela	64,74	13,00	16897,98	emerging/ developing	2008-2014

* Source: World Development Indicator, average over period from 2006-2015

** Source: UNDP Human Development Index

*** Source: BP Statistical Review of World Energy June 2015 p. 6, p.20

Appendix B: List of variables and data sources

Variable	Definition	Source
REER	Real effective exchange rate, CPI base	IMF's IFS online, BIS and national sources
PRIMFDI	FDI in primary sector over GDP	OECD database, ASEAN database and investment reports, UNCTAD country profiles, WIIW FDI database. GDP data from WDI. Author's calculations.
SECFDI	FDI in secondary sector over GDP	
TERTFDI	FDI in third sector over GDP	
TOTALFDI	Aggregate FDI over GDP	
TOT	Terms of Trade, exports over imports	WDI
TRADE	Sum of exports and imports over GDP	WDI
PROD	GDP per capita in current USD relative to the weightes average GDP per capita in current USD of main trading partners	IMF Direction of Trade Statistics, WDI Author's calculations
ASSETS	Direct, other and portfolio investment outflows over GDP	Sum of IFS Codes BFDA_BP6_USD BFOA_BP6_USD BFPAD_BP6_USD BFPAE_BP6_USD Author's calculations
OCI	Portfolio and other investment inflows over GDP	WDI
KAOPEN	Capital account openness	Chinn Ito Index (2006), updated version until 2013
LLGDP	Sum of currency outside banks over GDP	WDI
CREDIT	Credit to private sector over GDP	Financial Development and Structure Database, June 2017 version, World Bank
GCON	Government Expenditure over GDP	WDI
EXMG	Difference of M2 growth rate and GDP growth rate	WDI Author's calculations

Appendix C: Summary Statistics of Variables

Variable	Observations	Mean	Std. Dev.	Min	Max
REER	712	96.98881	14.25355	51.36486	275.8042
TOTALFDI	712	0.0455324	0.0482411	-0.054735	0.373245
PRIMFDI	648	0.0061204	0.0184704	-0.0130808	0.3204805
SECFDI	651	0.009948	0.0140366	-0.0360707	0.1924745
TERTFDI	666	0.0248756	0.0393586	-0.0794276	0.3240681
OCI	712	0.062359	0.1314757	-0.3604274	1.353523
ASSETS	712	0.0809494	0.1455608	-0.2310192	1.448217
LLGDP	683	63.93216	30.5767	14.68335	159.1787
CREDIT	699	57.58703	39.73485	6.915569	262.4581
KAOPEN	698	1.168676	1.380918	-1.894798	2.389193
TRADE	709	85.69405	56.13209	21.85242	439.6567
PROD	705	0.888863	0.815871	0.0353969	4.067879
TOT	622	109.8144	30.49527	56.66978	262.0892
EXMG	680	9.989692	13.91342	-27.61343	123.2602
GCON	705	16.2948	4.608951	6.531995	28.06423

Appendix D: Summary Statistics of Sectoral FDI distribution (as Share of Total FDI)

Variable	Observations	Mean	Std. Dev.	Min	Max
PRIMTOTAL	648	0.1345037	0.2778777	-1.260945	2.404321
SECTOTAL	651	0.2021468	1.133679	-26.68715	2.842529
TERTTOTAL	666	0.4786768	0.4401566	-1.930871	6.903448
UNALLOCTOTAL	534	0.1353765	0.8119645	-1.433213	17.58248