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Analysing Financial Globalisation: Cross-border Investment, International Risk Sharing, and Financial Reforms

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Thesis submitted to Trinity College Dublin in fulfillment of the requirements for the degree of Doctor in Philosophy

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Declaration

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Summary

The research topic of this thesis lies in the area of international macroeconomics. In particular, key aspects of financial globalisation are analysed empirically.

In the first essay, analysis of 21 industrial countries shows evidence for pro-cyclicality of capital gains on domestic stock markets over a medium term horizon. Thus, with cross-border ownership of portfolio equity investments, potential for hedging against domestic output fluctuations by means of the capital gains channel of foreign liabilities is found. The individual country analysis reveals substantial heterogeneity of these cyclicality patterns. The analysis suggests that this cross-country variation can be explained by the level of economic development and the size of financial markets.

The second essay comprises an analysis of 18 emerging European economies. We find domestic financial reforms to be positively associated with net capital inflows. Controlling for standard determinants of capital flows, we find banking sector reforms in particular to be consistent with higher net financial inflows, whereas no such correlation is found for security market reforms or for indicators of financial depth. Additional net inflows are reaped by the EU accession countries. Countries with more reformed banking sectors receive significantly higher FDI and 'other' investment net inflows; this is also found for gross financial inflows, but not for outflows.

In the final essay, we show that, controlling for standard determinants of net external positions, financially-remote countries exhibit more positive net external positions. This finding is found to be stronger for less advanced countries, hinting at external funding problems for more remote countries. Being located near financially very open countries, being in currency unions with creditor countries, or being highly integrated through financial and trade linkages with a 'core' country facilitates net external borrowing. Consequently, evidence is found for an important role of geographic and bilateral factors for a country's net external wealth.

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Chapter 1

Introduction

The research topic of this thesis lies in the area of international macroeconomics. In particular, key aspects of financial globalisation are analysed empirically.

In the first essay the potential for international risk sharing via financial markets is evaluated. Is a hedging of domestic output and wealth fluctuations possible by means of cross-country ownership of stock markets and bond markets? Specifically, the role of capital gains as a channel for international risk sharing is considered. This essay focuses on a sample of advanced industrialised countries, as they exhibit the highest degree of international financial integration and are thus most likely to benefit from cross-border asset ownership.

The second essay considers financial reforms and short- and medium-term international capital flows. Using a sample of emerging European countries, the question if financial policy reforms are beneficial in terms of increased capital inflows is considered. This is very relevant from a policy perspective, as decisions regarding the domestic financial system determine a country's attractiveness to foreign investors and consequently the degree of integration into global financial markets. For emerging economies, international capital flows can be very helpful in facilitating convergence to the most advanced countries.

The third essay integrates two major research areas - the analysis of external imbalances and studies of the geographical determinants of cross-border investment. By focusing on the net external position and its long-term determinants, we analyse why countries are net creditors or net debtors. In particular, we investigate if the geographic location of a country has an impact on the ability to raise external funding. To this end, we modify various concepts of the bilateral asset trade literature and test their relevance for the net external position.

Finally, some general conclusions from this thesis are drawn.

Chapter 2

Financial Markets and International Risk Sharing

2.1 Introduction

This paper provides a new angle on the topic of international risk sharing.[1] Most of the research has focused on indirect tests of risk sharing by analysing the co-movement of domestic and foreign consumption growth rates. In contrast, we employ a capital market approach in order to analyse the potential for hedging against domestic output and wealth fluctuations by means of cross-country ownership of financial assets. Accordingly, a necessary condition for the sharing of macroeconomic risks is that there are systematic patterns between macroeconomic fluctuations and capital gains on financial markets.

In times of increasing international financial integration, both investment income flows and capital gains are channels that can potentially provide international risk sharing.[2] Lane (2001) analysed the former channel using data on international investment positions, whereas the main innovation in this paper is to introduce the latter. This channel is of particular relevance to countries with large equity shares in their portfolios which make most of their returns in the form of capital gains (thus not affecting investment income flows). We focus in our analysis on capital gains on domestic financial markets (as a proxy for the foreign liability side).[3]

If domestic capital markets are partly owned by foreign investors, a pro-cyclical co-movement of capital gains with GDP growth brings about wealth stabilisation.[4] Faria et

[1] This chapter has been published as Schmitz, M. (2010), "Financial Markets and International Risk Sharing", *Open Economies Review*, 21: pp. 413-431.

[2] See Lane and Milesi-Ferretti (2007) for a documentation of the rapid growth in cross-border financial holdings.

[3] See Table 2.8 for a country analysis of rates of capital gains on foreign liabilities using international investment positions data. For portfolio investments, these are usually very similar to market rates, but often less accurate and poorer in terms of data availability - see Lane and Milesi-Ferretti (2009).

[4] The realisation of capital gains and losses involves liquidation costs however, which increase with the

al. (2007) indeed find higher equity shares in the composition of foreign liabilities in the last decade. We analyse if this provides improved potential for international risk sharing, namely if pro-cyclicality of capital gains on equity and in addition on bond markets is observable.[5]

This paper will examine if potential for international risk sharing through the capital gains channel is empirically observable which is "essential" in order to evaluate the stabilising effects of international investments (Obstfeld (2004)). Two main contributions are made: first the cyclicality of capital gains on equity and bond markets is analysed in panel data and on the country level; second, cross-country variation in cyclicality patterns is treated formally in order to find the fundamental reasons for differing degrees of international risk sharing.[6]

Accordingly, the rest of this paper is organised as follows: Section 2 places this paper in the existing literature, Section 3 presents the data and empirical strategy. The empirical analysis starts in the fourth section by investigating co-movements of domestic capital markets and GDP growth rates. Subsequently determinants of country heterogeneity will be approached in Section 5; eventually some concluding remarks will be made.

2.2 Contribution to the Literature

Obstfeld (2004) provides a comparison between an idealised world of fully-enforceable state-contingent contracts and the world of asset trade in non-contingent contracts (these are bonds and loans). In the ideal world with complete Arrow-Debreu securities, a country is fully insured against domestic output shocks. Hence, fluctuations in consumption are decoupled from idiosyncratic fluctuations in output, with consumption growth rates across countries being perfectly correlated.

However, as prominently shown by Backus, Kehoe and Kydland (1995) and Lewis (1996), output growth is actually more highly correlated across countries than consumption growth (the consumption correlations puzzle). Recent work has confirmed that the degree of risk sharing remains far from perfect, but has nevertheless increased over time. For example, this can be linked to the internationalisation of portfolios, that is the declining home bias of financial investors (Sørensen et al., 2007).

Securities that could in theory deliver international risk sharing are bilateral GDP income swaps as proposed by Merton (1990) or GDP linked securities (Shiller, 1993).

Due to the lack of these instruments we use the following application: When domestic GDP grows faster, the domestic stock market performance should improve accordingly; that is delivering higher capital gains for domestic and foreign investors. The benefit for foreign investors from this economic up-swing is in the form of capital gains and dividend payments

extent of illiquidity. This applies to FDI in particular, but less to portfolio investments.

[5]Capital gains on foreign assets, on the other hand, are influenced by a broad range of global factors such that a satisfying analysis is beyond the scope of this paper.

[6]This two-step approach is adapted from Lane's (2003) cyclicality analysis on fiscal policy.

which represents a 'benign loss' for the domestic economy. This decreases domestic income and wealth commensurately, thus providing a smoothing or 'hedging' of the economic performance across the different states of the world.[7] Obviously, this smoothing mechanism also works when the economy performs poorly, since now there should be capital losses (due to falling share prices) and lower income outflows.

This approach is related to Lane (2001) who analyses international investment income flows (these are dividends for portfolio equity). However, he does not find evidence for income smoothing through these flows at business cycle frequencies.

In addition, our application is related to Davis, Nalewaik, and Willen (2001) who develop a procedure to assess the gains to international financial trade in risky assets depending on the correlations of domestic and international equity returns and domestic output innovations.[8] Another theoretical perspective is provided by factor pricing models (for example Chen, Roll, and Ross, 1986) where asset prices reflect innovations in macroeconomic variables such as industrial production.

It is crucial to stress that the aim of this paper is not to provide an econometric model that explains capital gains. But the emphasis rather is on the co-movement of capital gains on different asset types and GDP growth in order to establish conclusions about cyclicality and the associated international risk sharing properties.

2.3 Empirical strategy

2.3.1 Data

In order to study the cyclical properties of capital markets, we constructed a dataset of 21 industrial countries.[9] This choice of the sample is very much determined by data availability both in length and scope. We are able to capture the time series from 1973 to 2006.[10]

We employ the Datastream domestic and global equity price indices in order to calculate annual rates of capital gains. These are available both in terms of domestic currency and US dollars and have the advantage of including only pure equity prices (thus without dividend payments). Hence these indices are appropriate in order to analyse the capital gains channel of international investments.

Furthermore we employ data provided by Datastream on domestic and global stock market capitalisation, as well as data on bond market capitalisation provided by the Bank for International Settlements (BIS).

[7] If firms choose not to pay out dividends, but instead to keep retained earnings, the mechanism works as well, since this should be reflected in higher stock prices and thus capital gains.

[8] See their paper for a model of international trade in risky financial assets under incomplete markets.

[9] Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

[10] Data availability differs by country. See Appendix for an overview.

For bond markets, we construct a bond price index which includes two-year and ten-year government bonds (provided by the Datastream benchmark indices). These indices are available both in domestic currency as well as in US dollars. Then the un-weighted annual real rate of capital gains is calculated. This allows a broad range of portfolio debt securities to be taken into account. As a global bond market price index we use the Lehman Global Treasury Index (available in US dollars from 1987). In order to calculate domestic rates for this index, we employ year-end exchange rates from the IMF's International Financial Statistics.

GDP (at constant prices) and CPI data for individual countries and the world economy are retrieved from the IMF's International Financial Statistics and World Economic Outlook databases. Conventionally, GDP growth rates measure the average growth rate in a given year; however, this is not appropriate for our analysis. As we are dealing with stock market rates of capital gains - which are essentially year-end to year-end rates - one has to apply the same logic to real rates of GDP growth. Consequently we construct a year-end to year-end rate of GDP growth by considering real GDP in the last quarter of a given year relative to the last quarter of the year before. Thus we obtain a real GDP growth rate which is consistent with the other variables in our analysis. In the same way we construct appropriate inflation rates in order to calculate real rates of capital gains. Output per capita data are taken from the Penn World Tables Version 6.2.

Given the data availability and the empirical focus on cyclical factors, the data used are at annual frequency.

2.3.2 Regression Specifications

As outlined above we analyse the co-movement of domestic output innovations (that is GDP growth rates) and the performance of domestic stock and bond markets as measured by real rates of capital gains. The main focus of the paper lies on panel analyis; however, we also estimate variants of the regression specifications on a country-by-country basis. This allows for establishing potential country heterogeneity in cyclicality patterns which we seek to explain in the second step of our analysis. Moreover, it offers a robustness check by observing which countries drive the overall panel results.

Panel Analysis

For our panel of countries we run the specification

$$kg_{it} = \alpha_i + \delta_t + \beta g_{it} + e_{it} \tag{2.1}$$

where e_{it} is first-order autoregressive with an error term z_{it} which is assumed to be independent and identically distributed with $N(0, \sigma_z^2)$. kg is the annual real rate of capital gains on

the respective domestic stock or bond market and g is the real annual rate of domestic GDP growth. The potential for international risk sharing and thus hedging is facilitated by $\beta > 0$.[11]

The regression estimation is by least squares. We employ a within-group fixed effects estimator with first-order autoregressive disturbances (in order to adjust for persistence and auto-correlation in the error term) as well as heteroskedasticity robust standard errors.

Our choice of employing this simple, contemporaneous specification is determined by our goal to establish the direction and magnitude of the co-movement between output growth and rates of capital gains. We leave more complex estimation specifications accounting for potential drivers of financial market developments to future research at this stage.

We report panel estimations including country fixed effects (α_i) and both country and time fixed effects (δ_t). Time fixed effects have the property of controlling for common global shocks. Consequently, the domestic GDP growth rate reflects solely the idiosyncratic part of domestic growth and likewise for the rates of capital gains, whereas in the country fixed effects estimation also global factors could drive the results.

Previous studies regarding co-movement of stock markets and in the fiscal policy literature use a similar set-up. Forbes and Rigobon (1998) demonstrate that regression-based measures of cyclicality are superior to unadjusted correlation coefficients when samples have different levels of volatility. This is very applicable in our case, as for example Germany has a relatively lower output volatility than for instance Greece or Ireland.

Lane (2001) studies the cyclicality of international investment income flows in an equivalent set-up. In the fiscal policy literature Sørensen et al. (2001), Lane (2003) and Alesina et al. (2008) measure cyclicality of government spending in this particular specification. Moreover, the empirical risk sharing literature (for example Sørensen et al., 2007) focusing on growth rates of GDP and consumption employs simple co-movement estimations in a similar fashion.

We consider regression specifications with both all variables expressed in domestic currency (thus taking the perspective of a domestic investor in one of the sample's countries) and all variables expressed in terms of US dollars in order to have a common currency among all countries. The latter can be understood as approaching the question from a foreign or international investor's point of view.

In addition to focusing on annual data, it is very crucial to know if extended periods of economic growth are reflected in higher cumulative capital gains on financial markets. Or in other words: are permanent output shocks reflected in financial markets and can thus be 'shared' internationally?

For this purpose we construct non-overlapping five-year GDP growth rates and cumulative

[11] If β is < 0, thus counter-cyclical, risk sharing would be in theory possible if foreign investors take short positions in the domestic markets. However, this possibility is not very feasible on a large scale on current financial markets.

five-year rates of financial market capital gains. We run the estimation

$$kg5_{it} = \alpha_i + \beta g5_{it} + u_{it} \tag{2.2}$$

where $kg5$ is the cumulative five year real rate of capital gains on the domestic market index and $g5$ is the cumulative real rate of domestic GDP growth over five years.

As persistence is much less of an issue over a five-year horizon, we do not employ an AR(1) correction term in this estimation. u_{it} is independent and identically distributed with $N(0, \sigma_u^2)$. We estimate with and without country fixed effects as well as with both country and time fixed effects.

Country Analysis

In the individual country specification (2.3), we estimate similarly to the panel specification by general least squares with a correction for first-order serial correlation in the error term. Moreover, heteroskedasticity robust standard errors are employed.

$$kg_{it} = \alpha_i + \beta_i g_{it} + e_{it} \tag{2.3}$$

where e_{it} is first-order autoregressive with an error term z_{it} which is assumed to be independent and identically distributed with $N(0, \sigma_z^2)$.

This estimation is the country-by-country equivalent to the country-fixed effects panel estimation. Thus we do not isolate the idiosyncratic components of GDP growth and capital gains on the stock market. In order to focus on the idiosyncratic components, we consider the co-movement of the deviation of domestic GDP growth from global GDP growth and the deviation of domestic rates of capital gains from global rates. Hence the question if the idiosyncratic part of domestic growth is reflected in the idiosyncratic part of the financial market performance is now also approached on an individual country level. Thus, we run

$$(kg_{it} - kg_{it}^*) = \alpha_i + \beta_i (g_{it} - g_{it}^*) + e_{it} \tag{2.4}$$

where e_{it} is first-order autoregressive with an error term z_{it} which is assumed to be independent and identically distributed with $N(0, \sigma_z^2)$. kg^* is the annual real rate of capital gains on the respective world financial index and g^* is the annual real rate of world GDP growth.

The estimation strategy is analogous to (2.3), that is including a correction for first-order serial correlation in the error term and heteroskedasticity robust standard errors.

We do not estimate cumulative five year specifications on a country-by-country basis, as we do not have a sufficient amount of data points available for individual countries.

Once the individual cyclicality coefficients are obtained from the country level estimates, we seek to explain the observed patterns across countries. For this we employ the cross-

sectional specification

$$\widehat{\beta}_i = \alpha + \lambda Z_i + \nu_i \tag{2.5}$$

where $\widehat{\beta}_i$ are the set of estimated parameters from the country regressions above. ν_i is independent and identically distributed with $N(0, \sigma_\nu^2)$. Z_i is a set of control variables. It includes the domestic stock and bond market capitalisation (as shares of GDP) as well as output per capita in natural log form (in PPP terms, taken from the Penn World Tables 6.2).[12] These control variables are chosen as indicators for the economic and financial development of the countries included in the sample. Weighted least squares estimation is used in order to take varying levels of accuracy for the (in the previous step) obtained dependent variable into account.[13]

This two-step approach is akin to Lane (2003) and Alesina et al. (2008) in the fiscal policy analysis. In the risk sharing literature (for example Sørensen et al., 2007)), a similar analysis is carried out, however with an imposed structure on the risk sharing coefficient β and thus employing annual data of the structural variables in order to explain their role for the risk sharing coefficient. Our approach has the advantage of not being affected by short-run fluctuations and thus reflecting the impact of heterogeneous structural factors more appropriately.

2.4 The Cyclical Properties of Domestic Capital Markets

2.4.1 Equity Markets

Panel Analysis

Panel analysis employing regression specification (2.1) shows the following (Table 2.1): Both in terms of domestic currency and in US dollars we find pro-cyclicality of rates of capital gains (significant at the 5% level and 1% level, respectively). This implies that in our sample a one percentage point increase in the domestic GDP growth rate co-moves with a 1.2 percentage points increase in the rate of capital gains (1.6 percentage points when estimated in US dollars). However, the result changes significantly when time fixed effects are included: insignificant β-coefficients suggests that global factors explained most of the pro-cyclicality observed before.

In terms of international risk sharing, this has crucial implications, since we are interested in isolating the idiosyncratic component of GDP growth. Our results hence imply that there is only limited evidence for a significant contemporaneous risk sharing mechanism via domestic stock market capital gains for the period of 1973 to 2006. This means that in the short-run

[12] We use average values by country for the explanatory variables over the period from 1975 to 2006 (until 2004 for GDP per capita), including only those years where actual rates of capital gains were available.

[13] We weight by the (in the previous step) obtained t-statistics.

of one year, the specific state of a national economy does not seem to be reflected in the idiosyncratic part of stock market capital gains.

In order to account for the fact that the cyclicality might have varied substantially over time, we divide the sample in the periods before and after 1985, thus examining if this time span exhibits different patterns.

Using country fixed effects only, shows that estimates are only significant for the financial globalisation period after 1985; when time fixed effects are added, results are (as in the full sample estimation) not significant for either period.

Moving from business cycle frequencies to a longer term horizon it is crucial to know if permanent shocks to an economy can potentially be hedged via the stock market. Employing specification (2.2), as outlined above, we find the following:

The empirical evidence is very striking (Table 2.2): In terms of domestic currency the cyclicality coefficient is 4.2, in US dollar terms 2.4 (both significant at the 1% level). The result also holds (with coefficients being significant at conventional levels, but smaller in magnitude), when time effects are added or neither country nor time effects are included.

Thus, there is strong pro-cyclical co-movement of domestic GDP growth and the stock market over a five year horizon. This points towards domestic equity being 'a claim on GDP' possibly not in the short run (that is one year), but definitely in the medium run of five years. Hence, in this time framework the necessary cyclical properties of the stock market are satisfied in order to generate economic or wealth stabilisation as described above.

This result is very appealing as it offers risk sharing potential on a global scale in particular when investments are made over a medium term horizon. Thus, equity capital gains can act as an effective risk sharing device, when the investment behaviour reaches the appropriate time frame. This result is in line with Giannone and Reichlin (2006) who find increasing risk sharing particularly over long horizons. Davis et al. (2001) find for six countries in their sample a positive co-movement of lagged stock market returns and domestic output innovations. Liew and Vassalou (2000) also show for a sample of ten industrial countries that a positive relation exists between the return on the stock market portfolio and future economic growth. This co-movement pattern would not be captured by specifications using annual data, but could explain part of the medium-term results.

Country Analysis

The country by country analysis (estimation (2.3)) shows a diverse picture (Table 2.3): in terms of domestic currency, we find countries exhibiting pro-cyclical co-movements between GDP growth and the stock market, namely Australia, Canada, the Netherlands, and Sweden. Australia shows the highest coefficient (5.3), implying that a percentage point increase of the GDP growth rates moves along with a more than five percentage point increase in stock market capital gain rates. Hence an economic expansion is also reflected in higher share

prices.[14]

The other countries in the sample do not show any significant co-movements in terms of domestic currency. When the data are denominated in US dollars (column (3)) coefficients and significance levels obtained are very similar (only Canada's coefficient turns insignificant, whereas Finland's coefficient is significant). These findings are in line with Canova and De Nicolo' (1995) who find stock markets in Germany, France, Italy, United Kingdom, and the United States to be acyclical.[15] Furthermore Davis et al. (2001) report that domestic output innovations are uncorrelated with own equity total returns using annual data.[16]

Estimation (2.4) answers the question if the idiosyncratic part of domestic growth is reflected in the idiosyncratic part of the stock market performance. In domestic currency terms, Finland, New Zealand, and Sweden show significant positive coefficients. Hence for these countries the idiosyncratic part of GDP growth is also reflected in the idiosyncratic component of the stock market performance. As this also holds in terms of US dollars, it implies that an international investor is able to reap exceptional economic expansions by means of excess stock market returns in theses countries. Thus, for this group of countries international risk sharing via foreign equity liabilities is feasible.

For Belgium, Denmark, the United Kingdom, and the United States, on the other hand, we find counter-cyclical relations. Remarkably, the coefficients are in the range of up to -3.6 (for United Kingdom). Applying this result means that an increase in the 'excess' (relative to the world economy) GDP growth rate of one percentage point is associated with a decrease in the differential of the domestic to the world stock market of more than three percentage points. The specification in terms of US dollars shows again very similar results indicating that exchange rate movements are a minor concern in our analysis.

Overall, the potential for international risk sharing at business cycle frequencies appears to be relatively small, in particular considering idiosyncratic components. We find evidence that for example Finland and Sweden have the potential to share idiosyncratic macroeconomic risks with foreign investors, whereas for instance Germany and Italy do not exhibit this potential, and for countries such as Belgium and the United Kingdom, we even find destabilising effects via the investments of foreigners.[17]

[14] In the main tables of the country-by-country analysis we focus on reporting the estimated β-coefficients and associated standard errors in order to present the key results as clear and concise as possible. More diagnostic statistics are provided in Table 2.9 and Table 2.10.

[15] Using quarterly total returns data from 1970 to 1991.

[16] For 22 countries from 1970 to 1995.

[17] The significant negative βs obtained by estimation (2.4) for Belgium, Denmark, United Kingdom, and the United States could theoretically imply the potential to share idiosyncratic macroeconomic risk by short positions of foreign investors.

2.4.2 Bond Markets

Panel Analysis

In this subsection, we look at co-movements of bond prices and real GDP growth. Again a positive co-movement of capital gains on bond markets and real GDP growth would facilitate international risk sharing. However, a significant, negative coefficient implies that a short position in the bond market by foreign investors would serve as a hedge against macroeconomic output fluctuations via foreign liability positions.

In the same fashion as for equity, panel specification (2.1) is employed. In terms of domestic currencies (Table 2.4) the coefficient -1.1 (-0.8 in US dollars) is significant (at the 1% and 5% levels, respectively). A coefficient of -0.3 (significant at the 1% level) is obtained when time fixed effects are included (insignificant in US dollar terms). These results imply that higher domestic output growth moves in line with lower prices on the domestic bond market. Intuitively this relation has some appeal, when we suppose that periods of higher interest rates (and thus lower bond prices) occur contemporaneously with economic booms. In gloomy economic periods, on the other hand, lower interest rates in order to stimulate the economy could drive bond prices up.

We refrain from a division of the sample in a pre- and a financial globalisation period, as for many of the countries data availability starts only in the late 1980s or even afterwards (see Appendix). However, we divide the sample using 1995 as the cut-off year in order to account for changes in the cyclicality patterns over time. Interestingly this reveals that the coefficients when country and time fixed effects are used are only significant (and negative) for the period after 1995. Thus we find some evidence that the sharing of idiosyncratic risks is in theory possible when foreign investors hold short positions (as suggested above), but not in the standard way of conventional 'long' investments.

Over a five year horizon there is only marginally significant evidence (Table 2.5). When estimated with country and time fixed effects we find a negative coefficient (-0.3) in terms of domestic currency with a significance level of 5% (column (2)).

In light of non-significance of the other specification, the result needs to be treated with caution. Still it could indicate, that the observed counter-cyclicality of bond markets also holds over medium term horizons.

Country Analysis

The panel results are supported by the findings for individual countries. We observe counter-cyclicality for many countries (Table 2.6). Estimating specification (2.3), significant negative values are found for Austria, Belgium, France, Germany, Italy, Japan, the Netherlands, New Zealand, and Switzerland. The largest coefficient in absolute value terms is noticeable for Belgium (-2.1). Consequently, there is no pro-cyclical co-movement observable through bond

markets. However, for these countries it holds true that short positions in bond holdings may be useful hedging instruments.

The non-significance in US dollar terms (column (3)) indicates the sensitivity of bond prices to exchange rate movements. For individual countries, this is the case for the majority of countries except for Ireland and the Netherlands, where specifically a coefficient of -3.3 (compared to -1.5 in domestic currency) indicates that bilateral exchange rate movements with the US dollar reinforce the negative relation. In this case it implies that higher economic growth for the Netherlands is accompanied by an exchange rate depreciation vis-a-vis the United States, thus leading to lower returns in US dollars than in domestic currency.

Analogous to the stock market analysis, we consider specification (2.4). Here, we find a positive coefficient of 1.1 (significant at the 5% level) for the United Kingdom. Thus, for the United Kingdom it appears to be feasible that idiosyncratic risk is shared via portfolio debt investments in the foreign liability position. In contrast, we see significant negative coefficients for Germany, Italy, and the Netherlands.

When denominated in US-dollars we find a negative cyclicality coefficient for Switzerland (however only significant at the 10% level). Interestingly, in this case it is possible for New Zealand to share idiosyncratic risk via the bond market (indicated by a coefficient of 2.2, significant at the 5% level).

2.5 Explaining Country Heterogeneity

The first-step analysis revealed substantial heterogeneity in cyclicality patterns across countries. Consequently it is of interest to find - as a second step - explanations for the cross-country variation in the estimations run so far. For this we employ the cross-sectional specification (2.5).

In Table 2.7 we see the results of this approach in order to find the determinants of cyclicality in rates of capital gains. In both domestic currency and in US dollars we observe rather similar results for the $\widehat{\beta}_i$s of the real rate of capital gains on domestic equity markets.

When considering the simple $\widehat{\beta}_i$s obtained from specification (2.3), clear evidence is found that deeper financial markets (as indicated by a higher stock market capitalisation) lead to more pro-cyclicality of the β-coefficients. Our interpretation of this result is that a higher stock market capitalisation implies a better coverage of the economy in that the performance of listed firms is a better mirror of the overall economic performance. Hence, business cycle fluctuations are more visible in the stock market performance. Specifically for the rate of capital gains in domestic currency a one percentage point increase in the ratio leads to an 0.03 unit increase in $\widehat{\beta}_i$. Hence, this result strengthens the proposition that also increasing equity shares in foreign liabilities facilitate international risk sharing.

We find GDP per capita to be positively significant (at the 1% level) for the cyclicality

of stock market capital gains. This allows the conclusion that a country's pro-cyclicality indicator is increasing with higher economic development.

Looking a the $\widehat{\beta}_i$s obtained from specification (2.4) (these are the 'idiosyncratic' β - coefficients), even more support is found for the proposition that deeper stock markets improve the risk sharing potential significantly. The estimated coefficients on stock market capitalisation are 20.9 and 24.2 (in US dollars), respectively (both significant at the 1% level). Thus, a one percentage point increase in the stock market capitalisation to GDP ratio leads to 0.20 unit increase in $\widehat{\beta}_i$. The coefficient on GDP per capita is sill significant, but negative for this specification. This implies that financial deepening seems to be relatively more beneficial than the level of output per capita for international risk sharing. Hence, risk sharing potential is *ceteris paribus* highest for countries that are financially most developed (rather than in terms of output per capita).[18]

For the bond market coefficients of specifications (2.3) and (2.4), both a higher market capitalisation as well as higher GDP per capita are associated with more negative cyclicality coefficients (significant only for the US dollar denominated estimations). Thus, in contrast to the stock market analysis, we find increasing counter-cyclicality with increasing market capitalisation of bond markets.

By and large, we find evidence for more risk sharing potential via the portfolio equity channel, the more a country is financially developed. Equity and bond markets differ significantly in the way they can provide international risk sharing. Assuming deep financial markets, equity provides risk sharing via conventional 'long' investments, whereas bond markets need foreign investors who go 'short', which is evidently much less feasible in practice.

2.6 Conclusion

In this paper the ability of countries to hedge their economic performance across different states of the world is examined. When looking at capital gains on domestic stock markets, hedging is especially feasible when the investment horizon amounts to five years. Country analysis reveals pro-cyclicality for countries such as Finland and Sweden in terms of capital gains on domestic stock markets, whereas counter-cyclicality is found for capital gains on the bond market for a majority of countries.

This suggests that economic hedging through the capital gains channel is working for certain countries. In addition, this could be achieved for further countries with larger financial markets. Thus, we find that in times of financial globalisation with higher equity shares in international portfolios, hedging and consequently enhanced international risk sharing becomes more and more feasible. It is crucial to stress that we focus merely on the foreign

[18] We drop Switzerland from the heterogeneity analysis of stock markets, as it represents an outlier in terms of its average stock market capitalisation.

liability side of international investments in this paper. Besides, the complete picture of international portfolios also incorporates foreign assets and exchange rate considerations.

In the Table 2.8, we show the main results of an equivalent country-level cyclicality analysis using international investment positions data on foreign liabilities (employing data from Lane and Milesi-Ferretti, 2007). The results obtained prove to be comparable with our findings which indicates that focusing on capital market data does not harm our analysis, but on the contrary is more fruitful due to a longer data coverage and the avoidance of well-known measurement problems which arise with international investment data (Lane and Milesi-Ferretti, 2009).

For further research it would be interesting to extend the country coverage to developing countries for whom economic hedging might be even more crucial in light of higher output volatility. Moreover, it would be interesting to know if international risk sharing has increased over time and which role in this regard is played by the capital gains channel. The role of financial deepening and home bias appears to be important as well.

Furthermore it is obvious that hedging considerations are only one part of international investment decisions. Findings on gravity models of international asset trade prove to be very significant (for example Lane and Milesi-Ferretti, 2008). Obstfeld (2006) points out the importance of developing a consistent general equilibrium portfolio-balance model. Dynamic general equilibrium model also have attracted a lot of attention recently, in particular notably by Tille and van Wincoop (2010) as well as Devereux and Sutherland (2007). It would be interesting to link their models to data on foreign assets and liabilities in order to further evaluate the extent and potential of international risk sharing in times of financial globalisation.

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Appendix

Country	Stock Market	Bond Market 2 Years	Bond Market 10 Years
	Availability	Availability	Availability
Australia	1973 - 2006	1986 - 2006	1986 - 2006
Austria	1973 - 2006	1983 - 2006	1983 - 2006
Belgium	1973 - 2006	1983 - 2006	1988 - 2006
Canada	1973 - 2006	1983 - 2006	1983 - 2006
Denmark	1973 - 2006	1983 - 2006	1988 - 2006
Finland	1988 - 2006	1988 - 2006	1990 - 2006
France	1973 - 2006	1984 - 2006	1984 - 2006
Germany	1973 - 2006	1978 - 2006	1978 - 2006
Greece	1988 - 2006	1998 - 2006	1998 - 2006
Ireland	1973 - 2006	1983 - 2006	1983 - 2006
Italy	1973 - 2006	1987 - 2006	1990 - 2006
Japan	1973 - 2006	1980 - 2006	1982 - 2006
Netherlands	1973 - 2006	1982 - 2006	1986 - 2006
New Zealand	1988 - 2006	1989 - 2006	1990 - 2006
Norway	1980 - 2006	1995 - 2006	1991 - 2006
Portugal	1990 - 2006	1991 - 2006	1992 - 2006
Spain	1987 - 2006	1987 - 2006	1989 - 2006
Sweden	1982 - 2006	1985 - 2006	1987 - 2006
Switzerland	1973 - 2006	1988 - 2006	1979 - 2006
United Kingdom	1971 - 2006	1978 - 2006	1978 - 2006
United States	1973 - 2006	1978 - 2006	1978 - 2006

For stock markets the Datastream domestic broad market price index (*DS TOTMK*) is used. For bond markets, we construct a bond price index which includes two-year (*DS BM02Y*) and ten-year government bonds (*DS BM10Y*) (Datastream benchmark indices). For the Norwegian short-term bond we use the Handelsbanken short-term Treasury bond index (*HMTNALL*).

Table 2.1: Cyclicality of capital gains on domestic stock market

	Domestic Currency		US Dollar	
	FE	**FE + TE**	**FE**	**FE + TE**
	(1)	**(2)**	**(3)**	**(4)**
Full Sample	1.22	-0.23	1.59	-0.11
	(0.56)**	(0.53)	(0.62)***	(0.58)
R^2	0.01	0.44	0.01	0.44
Observations	582	582	582	582
1974 - 1984	0.28	-0.07	1.02	0.49
	(1.13)	(1.11)	(1.09)	(1.12)
R^2	0.00	0.39	0.01	0.33
Observations	146	146	146	146
1985 - 2006	1.47	-0.28	1.18	-0.09
	(0.69)**	(0.60)	(0.69)*	(0.63)
R^2	0.01	0.49	0.01	0.44
Observations	420	420	420	420

Notes:

The dependent variable is the real rate of capital gains on the domestic stock market; the explanatory variable is the real GDP growth rate. The real rate of capital gains is calculated as the annual rate of return on the domestic stock market price index, deflated by the CPI inflation rate. We construct GDP growth by considering real GDP in the last quarter of a given year relative to the last quarter of the year before (accordingly for inflation rates). Estimation by generalised least squares with AR(1) correlated disturbances, heteroskedasticity robust standard errors (in parentheses) and involving country fixed effects ((1) and (3)) and country and time fixed effects ((2) and (4)). R^2 refers to the within-group measure. Time period: 1973-2006. Data availability varies by country (see Appendix). ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. Full regression outputs are available upon request.

Table 2.2: Five-year cyclicality of capital gains on domestic stock market

	Domestic Currency			US Dollar		
	FE	**FE +TE**		**FE**	**FE +TE**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Stock Market	4.24 (1.26)***	2.45 (1.30)**	2.57 (1.04)***	2.43 (0.96)***	1.83 (1.10)*	1.66 (0.75)**
R^2	0.12	0.37	0.05	0.07	0.19	0.04
Observations	108	108	108	108	108	108

Notes:

The explanatory variable is the cumulative real GDP growth rate over five years; the dependent variable is the cumulative real rate of capital gains over five years. The real rate of capital gains is calculated as the five year rate of return on the domestic stock market price index, deflated by the CPI inflation rate. We also construct cumulative five year GDP growth rates. Estimation by ordinary least squares with heteroskedasticity robust standard errors (in parentheses) and involving country fixed effects ((1) and (4)) and involving country and time fixed effects ((2) and (5)). R^2 refers to the within-group measure (except for columns (3) and (6)). Time period: 1980-2005. ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. Full regression outputs are available upon request.

Table 2.3: Cyclicality of capital gains on domestic stock market

	Dependent Variable			
	Domestic Currency		US Dollar	
	(1)	(2)	(3)	(4)
	Simple	Relative to Global	Simple	Relative to Global
Australia	5.28	1.81	4.86	1.44
	(1.74)***	(2.43)	(1.99)**	(2.47)
Austria	-1.47	-7.29	-0.68	-8.54
	(2.36)	(5.16)	(2.74)	(6.47)
Belgium	-1.63	-7.72	-1.82	-6.93
	(2.63)	(3.19)**	(2.64)	(2.81)**
Canada	1.71	0.60	1.35	-0.21
	(1.00)*	(1.40)	(1.19)	(1.28)
Denmark	0.65	-3.21	1.72	-3.04
	(2.87)	(1.95)*	(2.24)	(1.84)*
Finland	3.59	5.59	4.41	5.09
	(2.36)	(2.32)**	(2.04)**	(2.30)**
France	4.97	-2.74	5.21	-2.35
	(3.65)	(2.71)	(3.89)	(2.61)
Germany	0.97	-0.36	1.18	-0.34
	(2.44)	(1.90)	(2.53)	(1.97)
Greece	0.65	0.60	2.69	0.76
	(7.03)	(7.67)	(7.42)	(7.64)
Ireland	0.77	-0.14	0.20	-0.28
	(1.48)	(1.50)	(1.91)	(1.52)
Italy	1.88	-1.49	1.73	-0.91
	(2.71)	(2.26)	(2.79)	(2.15)
Japan	2.31	0.20	2.14	0.06
	(1.79)	(1.89)	(2.24)	(1.84)
Netherlands	3.70	1.43	3.75	1.62
	(1.96)*	(1.33)	(1.66)**	(1.28)
New Zealand	0.92	3.13	3.65	3.41
	(1.62)	(1.42)**	(2.36)	(1.40)**
Norway	4.26	-1.24	2.86	-1.31
	(3.63)	(2.14)	(3.40)	(1.95)
Portugal	0.10	-1.11	1.28	-1.38
	(3.44)	(1.95)	(2.05)	(1.97)
Spain	-0.40	0.74	1.10	0.98
	(3.95)	(2.93)	(3.57)	(2.71)
Sweden	5.05	3.17	6.34	3.01
	(2.43)**	(1.50)**	(1.76)***	(1.59)*
Switzerland	1.66	-1.82	1.22	-1.40
	(2.091)	(1.73)	(2.24)	(1.79)
UK	-0.44	-3.59	0.29	-3.79
	(2.57)	(0.76)***	(2.65)	(0.72)***
US	2.51	-1.71	2.51	-1.71
	(1.80)	(0.58)***	(1.81)	(0.58)***

Notes:
The dependent variables are the real rate of capital gains on the domestic stock market ((1) and (3)) and the deviation of the rate of capital gains on the domestic stock market from the global stock market ((2) and (4)), respectively. The explanatory variables are the real GDP growth rate ((1) and (3)) and the deviation of the real domestic GDP growth rate from global GDP growth ((2) and (4)), respectively. The real rate of capital gains is calculated as the annual rate of return on the domestic stock market price index, deflated by the CPI inflation rate. We construct GDP growth by considering real GDP in the last quarter of a given year relative to the last quarter of the year before (accordingly for inflation rates). For the respective global rates, we use the same method using global stock market price indices and world GDP. Estimation by generalised least squares with AR(1) correlated disturbances and semi-robust standard errors (in parentheses). Time period: 1973-2006. Data availability varies by country (see Appendix). ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. See Table 2.9 for more diagnostic statistics. Full regression outputs are available upon request.

Table 2.4: Cyclicality of capital gains on domestic bond market

	Domestic Currency		US Dollar	
	FE	**FE + TE**	**FE**	**FE + TE**
	(1)	**(2)**	**(3)**	**(4)**
Full Sample	-1.14	-0.28	-0.81	0.02
	(0.17)***	(0.11)***	(0.35)**	(0.22)
R^2	0.10	0.73	0.01	0.75
Observations	409	409	409	409
1979 - 1995	-1.61	-0.20	0.15	0.29
	(0.34)***	(0.21)	(0.49)	(0.35)
R^2	0.12	0.76	0.01	0.69
Observations	183	183	183	183
1996 - 2006	-0.70	-0.21	-2.73	-0.56
	(0.17)***	(0.11)*	(0.58)***	(0.32)*
R^2	0.07	0.72	0.11	0.82
Observations	206	206	206	206

Notes:

The dependent variable is the real rate of capital gains on the domestic bond market; the explanatory variable is the real GDP growth rate. The real rate of capital gains is calculated as the annual rate of return on the domestic bond market price index, deflated by the CPI inflation rate. We construct GDP growth by considering real GDP in the last quarter of a given year relative to the last quarter of the year before (accordingly for inflation rates). Estimation by generalised least squares with AR(1) correlated disturbances, heteroskedasticity robust standard errors (in parentheses) and involving country fixed effects ((1) and (3)) and country and time fixed effects ((2) and (4)). R^2 refers to the within-group measure. Time period: 1979-2006. Data availability varies by country (see Appendix). ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. Full regression outputs are available upon request.

Table 2.5: Five-year cyclicality of capital gains on domestic bond market

	Domestic Currency			US Dollar		
	FE	**FE +TE**		**FE**	**FE +TE**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Bond Market	0.17	-0.27	0.11	-0.06	-0.10	0.15
	(0.16)	(0.12)**	(0.12)	(0.53)	(0.34)	(0.36)
R^2	0.02	0.67	0.01	0.00	0.75	0.00
Observations	73	73	73	73	73	73

Notes:

The explanatory variable is the cumulative real GDP growth rate over five years; the dependent variable is the cumulative real rate of capital gains over five years. The real rate of capital gains is calculated as the five year rate of return on the domestic bond market price index, deflated by the CPI inflation rate. We also construct cumulative five year GDP growth rates. Estimation by ordinary least squares with heteroskedasticity robust standard errors (in parentheses) and involving country fixed effects ((1) and (4)) and involving country and time fixed effects ((2) and (5)). R^2 refers to the within-group measure (except for columns (3) and (6)). Time period: 1984-2004. ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. Full regression outputs are available upon request.

Table 2.6: Cyclicality of capital gains on domestic bond market

	Dependent Variable			
	Domestic Currency		US Dollar	
	(1)	(2)	(3)	(4)
	Simple	Relative to Global	Simple	Relative to Global
Australia	-1.15	-0.42	-0.63	-0.24
	(1.08)	(0.27)	(1.34)	(1.26)
Austria	-1.65	-0.40	-0.13	2.54
	(0.50)***	(0.72)	(1.58)	(2.09)
Belgium	-2.09	-0.28	-2.73	-0.98
	(0.53)***	(0.50)	(2.19)	(2.71)
Canada	-0.64	0.29	-0.93	-0.60
	(0.60)	(0.30)	(0.92)	(1.08)
Denmark	0.09	0.57	-0.70	-0.01
	(0.57)	(0.39)	(1.88)	(1.53)
Finland	-0.15	0.26	0.52	1.03
	(0.36)	(0.36)	(0.87)	(1.43)
France	-1.78	-0.31	-2.87	-1.18
	(0.49)***	(0.65)	(1.92)	(2.39)
Germany	-1.23	-0.85	-2.12	-0.95
	(0.47)***	(0.21)***	(1.86)	(1.45)
Greece	0.11	0.35	2.54	2.12
	(1.37)	(0.20)	(12.28)	(4.54)
Ireland	-0.37	-0.08	-1.55	-0.64
	(0.31)	(0.24)	(0.79)*	(0.72)
Italy	-1.89	-1.50	-2.52	-2.90
	(1.05)*	(0.81)*	(2.31)	(2.02)
Japan	-0.59	-0.82	-0.65	-1.53
	(0.34)*	(0.55)	(1.71)	(1.43)
Netherlands	-1.44	-1.18	-3.31	-2.63
	(0.47)***	(0.54)**	(1.65)*	(1.83)
New Zealand	-0.82	-0.05	2.08	2.23
	(0.43)*	(0.25)	(1.11)*	(1.00)**
Norway	0.28	1.01	-2.06	-0.83
	(1.13)	(1.18)	(2.32)	(1.71)
Portugal	0.43	0.31	-1.40	-1.33
	(0.44)	(0.42)	(1.72)	(1.54)
Spain	-0.80	0.12	0.56	1.54
	(0.99)	(0.87)	(2.00)	(2.04)
Sweden	-0.87	-1.00	0.60	1.82
	(0.57)	(0.71)	(1.65)	(1.94)
Switzerland	-1.73	-1.51	-2.27	-3.54
	(0.61)***	(1.22)	(2.13)	(1.94)*
UK	0.45	1.05	1.46	0.54
	(0.60)	(0.43)**	(1.41)	(1.80)
US	-0.38	-0.04	-0.38	-0.04
	(0.81)	(0.35)	(0.81)	(0.35)

Notes:
The dependent variables are the real rate of capital gains on the domestic bond market ((1) and (3)) and the deviation of the rate of capital gains on the domestic bond market from the global bond market ((2) and (4)), respectively. The explanatory variables are the real GDP growth rate ((1) and (3)) and the deviation of the real domestic GDP growth rate from global GDP growth ((2) and (4)), respectively. The real rate of capital gains is calculated as the annual rate of return on the domestic bond market price index, deflated by the CPI inflation rate. We construct GDP growth by considering real GDP in the last quarter of a given year relative to the last quarter of the year before (accordingly for inflation rates). For the respective global rates, we use the same method using global bond market price indices and world GDP. Estimation by generalised least squares with AR(1) correlated disturbances and semi-robust standard errors (in parentheses). Time period: 1978-2006. Data availability varies by country (see Appendix). ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. See Table 2.10 for more diagnostic statistics. Full regression outputs are available upon request.

Table 2.7: Determinants of variation in country cyclicality

	Cyclicality coefficients stock market			
	Domestic Currency		US Dollar	
	Simple	Relative to Global	Simple	Relative to Global
	(1)	(2)	(3)	(4)
Stock market capitalisation	3.30	20.86	4.97	24.19
	(1.12)***	(1.30)***	(1.06)***	(1.15)***
GDP-PC	4.86	-6.01	0.75	-8.56
	(0.78)***	(1.12)***	(0.72)	(1.07)***
R^2	0.26	0.64	0.14	0.76
	Cyclicality coefficients bond market			
	Domestic Currency		US Dollar	
	Simple	Relative to Global	Simple	Relative to Global
	(1)	(2)	(3)	(4)
Bond market capitalisation	-0.60	-0.60	-1.37	-1.00
	(0.80)	(1.20)	(0.31)***	(0.52)*
GDP-PC	-0.66	0.63	-11.33	-6.51
	(1.59)	(2.92)	(0.47)***	(1.14)***
R^2	0.08	0.10	0.74	0.32

Notes:

The dependent variables are the estimated beta-coefficients from the individual country analysis; the explanatory variables are country averages of GDP per capita in natural log form, domestic stock market capitalisation (as ratio to GDP) and domestic debt securities capitalisation (as ratio to GDP), respectively. Estimation by weighted least squares (weighting by t-statistics of "first-step" estimation). Standard errors in parentheses. Switzerland excluded from stock market analysis. ***, **, * denote significance at the 1, 5 and 10 percent levels respectively.

Table 2.8: The cyclical properties of capital gains on foreign liabilities

	Dependent Variable					
	Domestic Currency			US Dollar		
	(1)	(2)	(3)	(4)	(5)	(6)
	Rate of Capital Gain on Foreign Liabilities (Portfolio Equity)	Rate of Capital Gain on Foreign Liabilities (FDI)	Rate of Capital Gain on Foreign Liabilities (Portfolio Debt)	Rate of Capital Gain on Foreign Liabilities (Portfolio Equity)	Rate of Capital Gain on Foreign Liabilities (FDI)	Rate of Capital Gain on Foreign Liabilities (Portfolio Debt)
Australia	4.67	2.79	0.05	5.35	3.36	0.59
	(2.16)**	(0.95)***	(0.79)	(2.33)**	(1.35)**	(0.89)
Austria	0.97		0.80	2.37		-0.38
	(2.02)		(0.65)	(1.90)		(1.93)
Canada	2.62		0.33	2.42		0.05
	(1.16)**		(0.32)	(1.31)*		(0.26)
Finland	-1.39		-1.43	0.90		0.13
	(6.11)		(0.80)*	(5.66)		(1.09)
France	6.07	2.64	-1.62	1.77	0.11	-2.59
	(5.79)	(5.08)	(1.86)	(4.25)	(4.08)	(1.20)**
Germany	-3.06		-4.42	-1.42		-3.35
	(2.06)		(2.03)**	(1.89)		(2.25)
Italy	-6.76		-3.63	-6.14		-4.04
	(3.15)**		(1.88)*	(3.21)*		(3.31)
Japan	2.57		1.13	0.64		0.29
	(4.25)		(1.59)	(6.06)		(1.03)
Netherlands	2.18	0.17	-2.55	0.56	1.24	-6.18
	(3.41)	(0.58)	(1.18)**	(3.33)	(1.36)	(2.53)**
Portugal	-2.48			-4.32		
	(6.90)			(3.99)		
Spain	-3.05		5.92	-1.20		11.22
	(4.16)		(9.14)	(4.80)		(9.69)
Sweden	4.14	-0.54	-3.59	0.58	1.11	-1.96
	(3.28)	(0.96)	(5.69)	(2.98)	(1.67)	(4.63)
Switzerland	-1.90		-6.26	0.86		0.87
	(3.60)		(2.52)**	(3.49)		(2.45)
UK	0.68		-2.59	1.69		-0.63
	(3.40)		(6.55)	(3.80)		(4.85)
US	2.81	1.54	0.25	2.81	1.54	0.25
	(1.60)*	(0.65)**	(0.54)	(1.60)*	(0.65)**	(0.54)

Notes:
The dependent variable is the real rate of capital gains in the respective investment category of the foreign liability position; the explanatory variable is the real GDP growth rate. The real rate of capital gains is calculated as the difference between the annual change in the foreign liability position and capital inflows (divided by the foreign liability position of the previous year) and deflated by the CPI inflation rate. We use international investment positions data on foreign liabilities (from Lane and Milesi-Ferretti, 2007). For FDI only countries that report data at market value are considered. We construct GDP growth by considering real GDP in the last quarter of a given year relative to the last quarter of the year before (accordingly for inflation rates). Estimation by generalised least squares with AR(1) correlated disturbances and semi-robust standard errors (in parentheses). Data availability varies by country. ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. Full regression outputs are available upon request.

Table 2.9: Cyclicality of capital gains on domestic stock market (additional diagnostic statistics)

	Dependent Variable											
	Domestic Currency						US Dollar					
	(1)			(2)			(3)			(4)		
	Simple			Relative to Global			Simple			Relative to Global		
		R^2	DW		R^2	DW		R^2	DW		R^2	DW
Australia	5.28 (1.74)***	0.25	1.95	1.81 (2.43)	0.02	2.00	4.86 (1.99)**	0.18	1.99	1.44 (2.47)	0.01	2.06
Austria	-1.47 (2.36)	0.00	1.98	-7.29 (5.16)	0.07	2.01	-0.68 (2.74)	0.00	1.99	-8.54 (6.47)	0.07	2.02
Belgium	-1.63 (2.63)	0.01	1.82	-7.72 (3.19)**	0.24	1.93	-1.82 (2.64)	0.01	1.88	-6.93 (2.81)**	0.22	1.93
Canada	1.71 (1.00)*	0.06	1.82	0.60 (1.40)	0.01	1.79	1.35 (1.19)	0.03	1.89	-0.21 (1.28)	0.00	1.92
Denmark	0.65 (2.87)	0.01	1.89	-3.21 (1.95)*	0.10	1.97	1.72 (2.24)	0.04	1.82	-3.04 (1.84)*	0.10	1.95
Finland	3.59 (2.36)	0.04	1.86	5.59 (2.32)**	0.13	1.84	4.41 (2.04)**	0.08	1.82	5.09 (2.30)**	0.12	1.80
France	4.97 (3.65)	0.06	1.90	-2.74 (2.71)	0.03	1.95	5.21 (3.89)	0.05	1.91	-2.35 (2.61)	0.02	1.97
Germany	0.97 (2.44)	0.01	1.98	-0.36 (1.90)	0.00	1.95	1.18 (2.53)	0.00	1.96	-0.34 (1.97)	0.00	1.98
Greece	0.65 (7.03)	0.02	1.70	0.60 (7.67)	0.01	1.81	2.69 (7.42)	0.03	1.72	0.76 (7.64)	0.01	1.84
Ireland	0.77 (1.48)	0.03	1.77	-0.14 (1.50)	0.01	1.91	0.20 (1.91)	0.01	1.80	-0.28 (1.52)	0.01	1.93
Italy	1.88 (2.71)	0.01	1.87	-1.49 (2.26)	0.01	1.81	1.73 (2.79)	0.01	1.84	-0.91 (2.15)	0.00	1.82
Japan	2.31 (1.79)	0.05	1.96	0.20 (1.89)	0.00	1.93	2.14 (2.24)	0.02	1.95	0.06 (1.84)	0.00	1.91
Netherlands	3.70 (1.96)*	0.11	1.84	1.43 (1.33)	0.06	1.96	3.75 (1.66)**	0.13	1.83	1.62 (1.28)	0.07	1.96
New Zealand	0.92 (1.62)	0.00	1.80	3.13 (1.42)**	0.17	1.87	3.65 (2.36)	0.11	1.88	3.41 (1.40)**	0.20	1.88
Norway	4.26 (3.63)	0.09	1.99	-1.24 (2.14)	0.01	2.01	2.86 (3.40)	0.04	1.91	-1.31 (1.95)	0.01	2.00
Portugal	0.10 (3.44)	0.00	1.69	-1.11 (1.95)	0.02	1.90	1.28 (2.05)	0.00	1.53	-1.38 (1.97)	0.03	1.89
Spain	-0.40 (3.95)	0.00	1.97	0.74 (2.93)	0.01	1.85	1.10 (3.57)	0.01	1.86	0.98 (2.71)	0.01	1.81
Sweden	5.05 (2.43)**	0.12	2.06	3.17 (1.50)**	0.11	2.27	6.34 (1.76)***	0.20	2.11	3.01 (1.59)*	0.10	2.27
Switzerland	1.66 (2.091)	0.04	1.87	-1.82 (1.73)	0.04	2.06	1.22 (2.24)	0.01	1.93	-1.40 (1.79)	0.02	2.07
UK	-0.44 (2.57)	0.00	2.07	-3.59 (0.76)***	0.25	1.82	0.29 (2.65)	0.00	1.97	-3.79 (0.72)***	0.31	1.75
US	2.51 (1.80)	0.10	1.86	-1.71 (0.58)***	0.10	1.73	2.51 (1.81)	0.10	1.86	-1.71 (0.58)***	0.10	1.73

Notes:

The dependent variables are the real rate of capital gains on the domestic stock market ((1) and (3)) and the deviation of the rate of capital gains on the domestic stock market from the global stock market ((2) and (4)), respectively. The explanatory variables are the real GDP growth rate ((1) and (3)) and the deviation of the real domestic GDP growth rate from global GDP growth ((2) and (4)), respectively. The real rate of capital gains is calculated as the annual rate of return on the domestic stock market price index, deflated by the CPI inflation rate. We construct GDP growth by considering real GDP in the last quarter of a given year relative to the last quarter of the year before (accordingly for inflation rates). For the respective global rates, we use the same method using global stock market price indices and world GDP. R^2 refers to the respective R-squared, DW to the respective Durbin-Watson statistic. Estimation by generalised least squares with AR(1) correlated disturbances and semi-robust standard errors (in parentheses). Time period: 1973-2006. Data availability varies by country (see Appendix). ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. Full regression outputs are available upon request.

Table 2.10: Cyclicality of capital gains on domestic bond market (additional diagnostic statistics)

	Dependent Variable											
	Domestic Currency						US Dollar					
	(1)			(2)			(3)			(4)		
	Simple			Relative to Global			Simple			Relative to Global		
		R^2	DW		R^2	DW		R^2	DW		R^2	DW
Australia	-1.15 (1.08)	0.07	1.87	-0.42 (0.27)	0.02	1.75	-0.63 (1.34)	0.02	1.75	-0.24 (1.26)	0.03	1.85
Austria	-1.65 (0.50)***	0.31	2.03	-0.40 (0.72)	0.12	1.64	-0.13 (1.58)	0.12	1.64	2.54 (2.09)	0.00	1.92
Belgium	-2.09 (0.53)***	0.46	1.87	-0.28 (0.50)	0.01	1.72	-2.73 (2.19)	0.01	1.72	-0.98 (2.71)	0.07	1.94
Canada	-0.64 (0.60)	0.09	1.83	0.29 (0.30)	0.01	1.67	-0.93 (0.92)	0.01	1.67	-0.60 (1.08)	0.05	1.84
Denmark	0.09 (0.57)	0.02	1.88	0.57 (0.39)	0.08	1.82	-0.70 (1.88)	0.08	1.82	-0.01 (1.53)	0.01	1.69
Finland	-0.15 (0.36)	0.01	2.20	0.26 (0.36)	0.02	2.12	0.52 (0.87)	0.02	2.12	1.03 (1.43)	0.09	1.78
France	-1.78 (0.49)***	0.35	1.86	-0.31 (0.65)	0.02	1.74	-2.87 (1.92)	0.02	1.74	-1.18 (2.39)	0.06	1.96
Germany	-1.23 (0.47)***	0.20	1.72	-0.85 (0.21)***	0.03	1.75	-2.12 (1.86)	0.03	1.75	-0.95 (1.45)	0.03	1.85
Greece	0.11 (1.37)	0.11	1.23	0.35 (0.20)	0.05	1.83	2.54 (12.28)	0.05	1.83	2.12 (4.54)	0.03	1.90
Ireland	-0.37 (0.31)	0.07	1.97	-0.08 (0.24)	0.04	2.05	-1.55 (0.79)*	0.04	2.05	-0.64 (0.72)	0.09	1.78
Italy	-1.89 (1.05)*	0.19	1.82	-1.50 (0.81)*	0.09	1.90	-2.52 (2.31)	0.09	1.90	-2.90 (2.02)	0.19	1.90
Japan	-0.59 (0.34)*	0.14	2.03	-0.82 (0.55)	0.10	2.04	-0.65 (1.71)	0.10	2.04	-1.53 (1.43)	0.01	1.79
Netherlands	-1.44 (0.47)***	0.31	1.95	-1.18 (0.54)**	0.02	1.78	-3.31 (1.65)*	0.02	1.78	-2.63 (1.83)	0.12	1.91
New Zealand	-0.82 (0.43)*	0.20	2.13	-0.05 (0.25)	0.03	1.87	2.08 (1.11)*	0.03	1.87	2.23 (1.00)**	0.29	1.97
Norway	0.28 (1.13)	0.04	1.60	1.01 (1.18)	0.20	2.09	-2.06 (2.32)	0.20	2.09	-0.83 (1.71)	0.01	1.98
Portugal	0.43 (0.44)	0.03	2.00	0.31 (0.42)	0.06	1.92	-1.40 (1.72)	0.06	1.92	-1.33 (1.54)	0.02	1.79
Spain	-0.80 (0.99)	0.06	1.94	0.12 (0.87)	0.00	2.01	0.56 (2.00)	0.00	2.01	1.54 (2.04)	0.07	1.92
Sweden	-0.87 (0.57)	0.07	1.96	-1.00 (0.71)	0.29	1.73	0.60 (1.65)	0.29	1.73	1.82 (1.94)	0.02	1.78
Switzerland	-1.73 (0.61)***	0.31	1.93	-1.51 (1.22)	0.02	1.81	-2.27 (2.13)	0.02	1.81	-3.54 (1.94)*	0.07	2.01
UK	0.45 (0.60)	0.01	2.10	1.05 (0.43)**	0.02	1.70	1.46 (1.41)	0.02	1.70	0.54 (1.80)	0.03	1.94
US	-0.38 (0.81)	0.00	1.77	-0.04 (0.35)	0.04	1.85	-0.38 (0.81)	0.04	1.85	-0.04 (0.35)	0.04	1.85

Notes:

The dependent variables are the real rate of capital gains on the domestic bond market ((1) and (3)) and the deviation of the rate of capital gains on the domestic bond market from the global bond market ((2) and (4)), respectively. The explanatory variables are the real GDP growth rate ((1) and (3)) and the deviation of the real domestic GDP growth rate from global GDP growth ((2) and (4)), respectively. The real rate of capital gains is calculated as the annual rate of return on the domestic bond market price index, deflated by the CPI inflation rate. We construct GDP growth by considering real GDP in the last quarter of a given year relative to the last quarter of the year before (accordingly for inflation rates). For the respective global rates, we use the same method using global bond market price indices and world GDP. R^2 refers to the respective R-squared, DW to the respective Durbin-Watson statistic. Estimation by generalised least squares with AR(1) correlated disturbances and semi-robust standard errors (in parentheses). Time period: 1978-2006. Data availability varies by country (see Appendix). ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. Full regression outputs are available upon request.

Chapter 3

Financial Reforms and Capital Flows to Emerging Europe

3.1 Introduction

Over the last decade, emerging European economies were able to run persistent current account deficits, whereas emerging Asian and the oil exporting countries ran current account surpluses. This has invoked different hypotheses as to global current account imbalances: a frequently mentioned explanation is the inefficiency of the financial systems in emerging economies (Prasad, Rajan, and Subramanian, 2007; Ju and Wei, 2006). A related argument is that emerging economies seek high quality assets of industrial countries (Caballero, Farhi, and Gourinchas, 2006; Mendoza, Quadrini, and Rios-Rull, 2008). Both arguments support the 'saving's glut hypothesis' (Bernanke, 2005 and 2007) and explain the persistent net capital outflows of financially underdeveloped emerging countries; they also give reason to why the United States are the main recipient of international capital flows. However, studies such as Lane (2008) and Hermann and Winkler (2008) report that the new EU accession countries were able to receive substantial net financial inflows in recent years.

This paper examines the role of financial development for this unique European experience. More specifically, we analyse if countries with more developed financial systems attract net capital inflows.[1] While the standard (medium-term) determinants of international capital flow patterns have been prominently established by Chinn and Prasad (2003) and Gruber and Kamin (2007), there is no consensus yet on the role of domestic financial systems for international capital flows.

Financial development comprises two crucial concepts: financial liberalisation and financial deepening (Agca, De Nicolo, and Detragiache, 2007). Financial liberalisation refers to

[1] In the literature one often uses the current account balance as a measure for net financial inflows. We focus on net financial inflows directly, but also present results using the current account balance. Section 3.2.2 gives reasons for potential differences between these two measures.

a lower degree of government involvement, and a subsequently more market-based financial system. Financial deepening, on the other hand, refers to increases in volumes of markets (such as increases in market capitalisation and liquidity). Both can move hand in hand, but Agca et al. (2007) mention examples where the extent of both concepts differs substantially.[2]

This paper not only considers volume-based measures of financial deepening, but also financial liberalisation as a result of financial policy reforms (these are for example liberalisations in credit or interest controls and the privatisation of the banking sector). The rationale for this is two-fold: financial reforms, implying enhanced, market-based financial systems, may attract higher financial flows contemporaneously; furthermore financial reforms can be regarded as a promise for larger and deeper capital markets in the future. Tressel and Detragiache (2008) find that reforms have indeed led to more financial deepening in the banking sector provided that the legal and institutional framework is functioning. Both dimensions of financial development matter for international as well as for domestic investors, hence affecting gross and net financial flows.

In order to analyse the role of financial development for net capital inflows in Emerging Europe in a comprehensive way, we include measures of financial reforms, financial depth, and various indicators of financial integration. In particular, we consider two categories of financial reforms: banking sector and security market reforms. Moreover, heterogeneous effects of financial development on different investment categories (in particular on FDI) as well as on gross inflows and outflows are examined.

The theoretical literature on international capital flows emphasises the role of information asymmetries between foreign and domestic investors, the exposure to liquidity, moral hazard and limited enforcement, and the incompleteness of financial markets.[3] Distinguishing between the different investment categories, Razin, Sadka, and Yuen (1999) show that only FDI has the potential of generating an efficient level of domestic investment, whereas portfolio equity investments and debt flows lead to domestic overinvestment and foreign underinvestment. The problem of information asymmetries is alleviated in the case of FDI where foreign investors exercise actual control and management. However, this comes at a cost when investors need to sell their foreign direct investment prematurely (and at a lower price) due to a liquidity shock (see Goldstein and Razin, 2006). Atkeson (1991) considers a model of international debt flows containing moral hazard and enforcement problems. The model predicts debt outflows in periods of low economic output.

This paper uses a financial reform index maintained by the European Bank for Reconstruction and Development (EBRD, 2008), including countries from Central and Eastern Europe (CEE), South-Eastern Europe (SEE), and the Commonwealth of Independent States (CIS). The driving forces behind financial reforms were analysed by Abiad and Mody (2005),

[2]France in the 1970s had deep, but repressed financial markets, whereas Argentina exhibited liberalised, but shallow markets in the 1990s.

[3]See Kirabaeva and Razin (2010) for an excellent survey of this literature.

who developed a new index on financial reforms which was subsequently extended by Abiad, Detragiache, and Tressel (2008).[4] Abiad and Mody (2005) find balance of payments crises, falling global interest rates, path dependency, regional leaders, and trade openness (for the least developed countries) to be positive factors towards financial reforms, whereas banking crises have a negative impact. Additionally, financial reforms have a political economy dimension as government action is needed to implement them. Mishkin (2007) suggests that governments have a self-interest in a state-owned banking sector.[5]

Campos and Kinoshita (2008) find that gross FDI inflows are strongly affected by financial sector reforms. Nevertheless, theoretically the effect on *net* capital flows is *a priori* ambiguous. For example, reforms rendering an economy more attractive to domestic as well as foreign investors can lead to increased inflows and less outflows, thereby increasing net inflows. On the other hand, reforms promoting financial sector development may foster domestic savings and domestic investment. This could reduce the need for foreign funds by encouraging sufficient domestic savings, thereby reducing net inflows.

For a sample of European and Asian emerging economies, Hermann and Winkler (2008) report that deeper and more integrated financial markets are beneficial in order to receive net capital inflows. In particular, the CEE countries were able to run large current account deficits over the last decade, leading to rapid convergence with the EU countries in output and living standards. Brezigar-Masten et al. (2008) find non-linear growth effects of financial development for less developed European countries, whereas the effects of international financial integration are only significant beyond a threshold level of financial development. Lane and Milesi-Ferretti (2007b) point out the importance of FDI inflows for the CEE countries. Hermann and Winkler suggest that predominantly high levels of FDI in the banking sectors of the CEE group are a key factor for receiving high levels of capital inflows.

The IMF's World Economic Outlook (2008) presents evidence closely related to our research: the authors' analysis concludes that the importance of financial liberalisation (as measured by the reforms index of Abiad et al.) is highest for the CEE countries, which they attribute to the strong presence of foreign banks in the region. Abiad, Leigh, and Mody (2007) show that for the sub-sample of new European Union member states, increasing financial integration leads to receiving *down-hill* capital flows from the richer European countries, thereby facilitating convergence in European income levels. Lane (2008) attributes this to the multi-dimensional character of the institutional anchor provided by European Union membership, which has eliminated many of the barriers to international capital flows that are still

[4]Past advances in measuring financial liberalisation include Edison and Warnock (2003), who construct an 'investable' equity index as a measure for intensity of capital controls, Kaminsky and Schmukler (2003), who develop an index focusing on stock market regulations as well as international transactions, and Bekaert, Harvey, and Lundblad (2005), who determine dates of equity market liberalisations and find a subsequent positive effect on economic growth.

[5]Rajan and Zingales (2003) state that incumbents in financial and industrial sectors oppose financial reforms (which only changes if the economy is open to trade *and* capital flows). Bartolini and Drazen (1997) come to the conclusion that reforms are likely if access to international capital is facilitated.

faced by other emerging market economies.

The remainder of the paper is organised as follows: in Section 2 the dataset is presented, followed by the empirical strategy in Section 3. The empirical results are presented in Section 4, and Section 5 concludes.

3.2 Data

3.2.1 EBRD Data On Financial Reforms

The European Bank for Reconstruction and Development (EBRD) publishes data on financial sector reforms as part of its annual Transition Report (EBRD, 2008). This report focuses on the years 1989 - 2007 and includes 29 countries from Central and Eastern Europe (CEE), South-Eastern Europe (SEE), and the Commonwealth of Independent States (CIS). Due to data availability reasons, we focus on 18 countries and the years 1995 to 2006.[6] With regard to our particular sample of transition countries, this time frame is appropriate as it follows much of the convergence process of these economies, but without including a potential transition bias due to the strong impact of shifting from planned to market economies (in the period from 1990 to 1994).

The Transition Report assesses emerging economies against the standards of industrialised market economies, and provides reform scores to reflect the assessments of EBRD country economists. For this paper, two scores are relevant: 1. banking reforms and interest rate liberalisation and 2. securities markets and non-bank financial institutions. In both of these categories, scores range from one to four (where four implies the highest degree of implemented reforms).[7]

Regarding banking reforms, the lowest scores are allocated to countries with little progress beyond the establishment of a central bank and commercial banks, whereas high scores imply the (full) adoption of Bank for International Settlements (BIS) standards as well as functioning banking competition and supervision.

Reforms of securities markets and non-bank financial institutions refer to working private security exchanges as well as the emergence of private investment and pension funds, and regulation that meets the International Organization of Securities Commissions's (IOSCO) standards.[8]

[6]The sample comprises Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, and Ukraine.

[7]The EBRD economists also use incremental scores of 0.33 and 0.66 (for example 2.33 to indicate 2+). A full adoption of highest international standards would results in a 4+, thus a value of 4.33. However, the highest score given for our sample of countries is four.

[8]See the EBRD Transition Report or the EBRD website http://www.ebrd.com/country/sector/econo/stats/timeth.htm for a detailed description on the EBRD's scoring method.

3.2.2 Other Data Sources

In this paper we use primarily financial account data in order to determine net financial inflows. These data were retrieved from the IMF's Balance of Payments Statistics (BOPS). In the multilateral international capital flows literature, focus is often put on current accounts to measure net financial inflows. The reason is the Balance of Payments Identity, which states that the current account is equal (with reversed sign) to the capital and financial account (provided that there are no errors and omissions, IMF, 1993).[9] We focus on financial account data, since it is our goal to have as precise as possible measures of net financial flows, net balances from the different investment categories, and gross financial inflows and outflows separately. In the IMF's (1993) definition, the financial account is the net change in foreign ownership of investment assets. It is divided into direct investments, portfolio investments, other investments, and reserve asset transactions.[10]

Thus, given the above stated identity, the difference between the current and financial accounts is the capital account, which reports the transfer of capital goods and other capital transfers such as debt forgiveness. In other words, not only the financial account can potentially finance current account deficits, but also the capital account could play an important role. Hence, as a robustness check we also use the current account to measure net financial inflows.

In order to further explore the role of foreign direct investments (FDI), we use BOPS data which distinguish between equity capital, reinvested earnings, and other direct investment capital. Another source of FDI data is the UNCTAD database. It not only publishes overall FDI figures, but also data on cross-border mergers and acquisitions (M&As).[11]

In a set of estimations on net capital inflows with a particular focus on FDI, we use further transition indicators from the EBRD (2008). We construct a measure of privatisation (as an unweighted average of large scale and small scale privatisation scores), use an overall infrastructure indicator (covering electric power, railways, roads, and telecommunications), and a corporate governance and enterprise restructuring indicator. The scoring system used by the EBRD is the same as for the financial reform variables.[12]

3.3 Empirical Strategy

3.3.1 Econometric Specifications

As is common practice in the literature (for example, Chinn and Prasad, 2003; Gruber and Kamin, 2007), we focus on medium-term fluctuations in order to avoid short-term cyclical

[9] In general, the term capital account is often used to describe what the IMF defines as the combined "capital and financial account".

[10] Refer to Appendix A2 for an overview of the different components of the balance of payments data used.

[11] For an overview of the other variables used in the analysis, refer to Appendix A1 and Section 3.3.2

[12] See the methodology of the EBRD Transition Report for details about these scores.

factors blurring the estimations.

We employ panel data techniques with non-overlapping three-year averages for each country and variable. By least squares we run the following reduced form model

$$NETINFLOWS_{it} = \alpha + \delta_t + \beta X_{it} + \gamma Y_{it} + \phi Z_{it} + e_{it} \tag{3.1}$$

where $NETINFLOWS_{it}$ are net financial inflows (as a ratio to GDP), X_{it} includes standard control variables, Y_{it} includes financial reforms indicators, and Z_{it} comprises financial deepening and integration variables.[13] Furthermore, capital flows across different investment categories are analysed. We also run regression specifications employing gross inflows and outflows, as well as the current account balance as dependent variables, respectively. The former helps to disentangle potential differences in the investment behaviour of foreign and domestic agents, whereas the latter facilitates comparisons with other studies.

We include heteroskedasticity robust standard errors as well as time dummies to allow the average level of net financial inflows to vary over time and to control for global factors which impact all countries in our sample. We use the pooled estimation (3.1) following Chinn and Prasad (2003) and Gruber and Kamin (2007) and regressions including country fixed effects:[14]

$$NETINFLOWS_{it} = \alpha_i + \delta_t + \beta X_{it} + \gamma Y_{it} + \phi Z_{it} + e_{it} \tag{3.2}$$

In addition, we use a between estimator in order to solely focus on cross-country variations without considering any time-series information.

We also employ regressions based on annual data. Due to the high persistence of net financial inflows at the annual frequency we use a Prais-Winsten specification with an AR(1) correction term, country as well as year fixed effects, and heteroskedasticity robust standard errors.[15] As shown by Chinn and Prasad (2003), results at annual frequency are comparable to medium-term results, but tend to be less precise. Thus, these results serve as robustness tests of those observed at the medium-term horizon.

3.3.2 Specification Issues

Financial Variables

Considering evidence of the medium-term impact of domestic financial development on international capital flows, the focus of research has been foremost on the financial deepening dimension. Chinn and Ito (2005) point out that the effect of financial deepening on net capital inflows is ambiguous: theoretically, it can on the one hand induce higher savings through

[13] See Section 3.3.2 for details about these variables.

[14] In the same fashion as in Chinn and Prasad (2003) our focus is on understanding cross-country variations, whereas including fixed effects "would detract from much of the economically meaningful parts of the analysis" (Chinn and Prasad, 2003, p. 66).

[15] Thus, we estimate equation (3.2) with $e_{it} = \rho e_{it-1} + z_{it}$.

more developed financial markets, but on the other hand there could be less savings due to a decrease in the precautionary savings rate. Furthermore, it could lead to increased financial inflows by attracting more foreign savings and thus stimulating domestic investments.

There is no conclusive empirical evidence to date on the impact of financial deepening indicators on current account balances.[16] Commonly used indicators of financial depth are stock market capitalisation as well as private credit measures (Gruber and Kamin, 2007; Chinn and Ito, 2005). In line with Lane and Milesi-Ferretti (2008), we include bank deposits (as a ratio to GDP) in order to capture the size of a country's banking system.

The role of domestic financial reforms is also not clear *a priori*. A more developed financial system might improve access to foreign funds (thus increasing net financial inflows) and enhance allocative efficiency (Abiad, Oomes and, Ueda, 2004), thereby leading to better investment opportunities. Alternatively, there could be a decreased need for foreign funds since better intermediation opportunities arise from a reformed financial system (IMF, 2008). The IMF's World Economic Outlook (2008) finds a significant negative impact of financial reforms (however, without disentangling the effect of entry barriers to foreign investors) on current account balances using interaction terms for countries from Emerging Europe in a global regression framework, whereas no significant role for financial depth is found.

We also run estimations including measures of financial openness, both *de-facto* (Lane and Milesi-Ferretti, 2007a) and *de-jure* (Chinn and Ito, 2008). We expect more financial openness to be associated with higher net financial inflows to reflect better borrowing opportunities abroad. In line with Hermann and Winkler (2008), we measure the degree of financial integration with the Euro Area countries (proxied by the consolidated foreign bank claims of Euro Area reporting banks on the respective countries in Emerging Europe) and include the share of foreign-owned banks and foreign-owned banking assets from Claessens et al. (2008). Again, one expects more financial integration to be positively correlated with net financial inflows. Moreover, we include banking, currency, and debt crises indicators (Laeven and Valencia, 2008) as the risk of financial crises is expected to lead to lower levels of financial inflows.[17]

Control Variables

Our method follows the approaches of Chinn and Prasad (2003) and Gruber and Kamin (2007). These papers establish standard medium-term determinants of current account bal-

[16] Chinn and Prasad (2003) find an increase in current account balances due to financial deepening (as measured by M2), Chinn and Ito (2005) report larger current account deficits due to financial deepening (measured as private credit) interacted with legal system indicators. Employing annual data, Hermann and Winkler (2008) report evidence of larger current account deficits due to financial deepening (as measured by M2 and private credit) as well as measures of financial integration and openness for Emerging Asia and Emerging Europe.

[17] To be more specific, we use a dummy variable which has a value of one when the country experiences a systemic financial crisis in the respective three-year or one-year period and zero otherwise.

ances as the measure of net financial inflows: an important factor is a country's fiscal balance. Overlapping generations models as in Obstfeld and Rogoff (1996) suggest a redistribution of future income to current generations by means of fiscal deficits, thus leading to increased current account deficits. Non-Ricardian behaviour implies that economic agents do not offset government budget surpluses by less private savings (particularly in liquidity-constrained countries, as shown by Bussiere, Fratzscher, and Mueller, 2006).[18]

Chinn and Prasad (2003) also find that a country's net foreign asset (NFA) position affects its net investment position and hence the current account. Thus, the lagged value of the NFA position is used in regression analysis in order to avoid correlation with the present current account balance. In order to account for a life-cycle theory of consumption and savings, we use the age-dependency ratio, implying that relatively young and old countries are more likely to receive net financial inflows. Following Chinn and Prasad (2003), we include real GDP per capita in the estimations in order to capture the dynamics of relatively poorer countries needing more foreign capital, whereas richer countries are able to export capital.[19] The degree of trade openness (defined as the sum of exports and imports over GDP) might be seen as a signal of being better equipped to generate export revenue in order to pay off external debt (Chinn and Prasad, 2003). The (lagged) GDP growth rate is included because it might trigger increased capital inflows from foreign investors who want to reap higher returns arising from economic growth periods.[20]

3.4 Results

3.4.1 Medium-term Analysis

Net Inflows

In Table 3.1 we present the first set of results focusing on net financial inflows. In column (1) we find a significant (at the 1% level) positive coefficient on banking sector reforms, whereas the coefficient on security market reforms is not significant. Among the financial deepening variables, the ratio of banking deposits to GDP exhibits a negative sign (significant at the 1% level). Thus, we find that countries with more liberalised banking sectors attract larger net capital flows, whereas those with a larger banking sector show less net inflows. Moreover, stock market characteristics are not significant.

Looking at the set of control variables, we observe that less developed countries (in terms of GDP per capita) experience greater net financial inflows (significant at the 1% level). This is in line with the concept of *downhill* net financial flows to relatively poorer countries. Higher

[18] Non-Ricardian behaviour means that the government's budget constraint is not internalised by private economic agents.

[19] Specifically, countries that are below their steady state output are expected to be net importers of capital.

[20] For future research it would also be interesting to include measures of economic volatility.

openness to trade goes along with greater net inflows, and EU membership for the respective countries and time periods following EU accession is significantly positive. The sign of the EU dummy indicates that those transition countries which joined the European Union received additional net inflows. This finding is in line with Lane (2008), who suggests that the multi-dimensional institutional anchor associated with EU membership has facilitated access to international capital flows.[21]

In column (2) we run the same specification, but now with country fixed effects in order to focus on within-country developments.[22] Again, we observe that a higher degree of banking sector reforms is associated with greater net inflows.[23]

We employ the between estimator in column (3) in order to focus solely on cross-sectional information. The coefficient on bankings sector reforms is positive and significant, whereas the control variables fail to be significant.

In columns (4), (5), and (6), we repeat the regressions but now control for financial crises. Previous results persist and in the pooled estimation (4) and between estimation (6), we find significantly less net inflows for countries experiencing a debt crisis. This finding is in line with Atkeson's (1991) theoretical model where asymmetric information between borrower and lender explains capital outflows in bad times.

Following Chinn and Prasad (2003) and Gruber and Kamin (2007), in columns (7) and (8), we use the current account balance as an alternative way of assessing net financial inflows. This measure differs from net financial inflows as the current account is the mirror image of not only the financial account but also the capital account.

As previously observed, countries with more banking sector reforms run larger current account deficits, and thereby receive greater net financial inflows.[24] Countries with larger stock markets exhibit higher current account surpluses.

The fiscal balance shows a positive sign. Further evidence is found for more developed countries receiving less net inflows, whereas the EU accession countries receive more net financial inflows. In the fixed effects specification (column (6)) only the banking reform index is significant at the 5% level, hence reinforcing the previously obtained result of banking reforms being crucial for attracting net financial inflows.

[21] In light of these results, it is crucial to mention that the Emerging European country sample is a special set of countries. While the inclusion of an EU membership dummy does not render the banking reforms variable insignificant, it could be the case that countries reformed their banking sectors in order to fulfill accession requirements for the European Union. However, it is beyond the scope of this paper to analyse the driving forces behind the implementation of financial reforms.

[22] We test the joint significance of the country fixed effects following Baltagi (2005, p. 13). These are jointly significant at the 5% level for the estimations shown in column (2) and (5), and at the 10% level for column (8). In addition, we test if the ommission of country fixed effects in the pooled estimations results in hetereoskedasticity in the residuals using the Breusch-Pagan / Cook-Weisberg test. However, we cannot reject the null hypothesis of homoskedasticity at conventional significance levels in any of our pooled estimations throughout the paper.

[23] Among the control variables, we see that a higher age-dependency ratio implies greater net inflows.

[24] In Section 3.4.3 we relate the results based on the current account to the existing literature.

We also tested various measures of international financial integration such as *de-facto* international financial integration (as defined by Lane and Milesi-Ferretti, 2007a), the Chinn-Ito index of *de jure* financial openness, and measures of (regional) financial integration, namely the shares of foreign banks, and foreign owned banks' assets, and the ratio of Euro Area owned banking claims to GDP. All these measures are insignificant and do not alter the results previously obtained.[25]

Decomposition of Net Inflows

In Table 3.2, we examine net inflows of different investment categories with respect to financial development indicators and the set of control variables as defined above.

In columns (1) to (4), we use pooled estimations: strikingly, we do not find significant coefficients for either the financial or the control variables for portfolio equity (column (1)). For FDI (column (2)), countries with a more liberalised and larger banking sector (and more openness to trade) receive significantly higher net inflows. This could reflect the participation of foreign banks in the Eastern European banking system through direct investments. An alternative explanation is that banking reforms might signal an improved general investment environment. We will revisit this point in the next subsection. Richer countries and countries with a higher stock market capitalisation, however, receive lower FDI net inflows. This finding shows that *downhill*-flows work through the FDI category. Furthermore it might also be an indication of financially constrained countries borrowing more through FDI since it is harder to expropriate as described by Albuquerque (2003).

From a theoretical perspective, these findings are consistent with Kirabaeva's (2009) model where there are one-way FDI flows from developed to emerging countries (in terms of GDP per capita). Conversely, our findings regarding the banking sector do not support his hypothesis of countries with weaker financial institutions receiving more net FDI inflows.

Portfolio debt investments (column (3)) correlate significantly and negatively with the fiscal balance, which can be explained by less need of governments to sell bonds to foreign investors when the fiscal position is relatively high. In the other investment category (column (4)), we find the opposite result for the fiscal balance. Crucially, the banking reform index is positively associated with net inflows in this category. This can be explained by the fact that many of the other flows are in the form of banking loans.[26]

Turning to within-country developments across investment categories, the results for FDI (column (6)) are very similar to the pooled estimation: more reformed and larger banking

[25] We run additional robustness tests including a more refined demographic specification following Fair and Dominguez (1991) and Higgins (1998) which leaves our findings unchanged. Moreover, we drop Russia (as a potential outlier) from all estimations, and use private credit as a ratio to GDP (instead of banking deposits), but find the results to be unaffected in each case.

[26] As we cannot disentangle the role of supervision in the banking reform index, we cannot rule out that McKinnon's and Pill's (1996) finding of overborrowing (when financial liberalisation without adequate supervision takes place) applies.

sectors correlate positively with FDI net inflows, whereas an increased stock market capitalisation is associated with less net inflows. Also in the fixed effects estimation, higher GDP per capita is consistent with less FDI net inflows. For the other investment category (column (8)), we do not find evidence that more banking sector reforms correlate positively with higher net inflows.[27]

Overall, we find strong evidence that banking reforms are associated with FDI and to a lesser extent with other investment net inflows, whereas we do not find a significant relation for security market reforms with any of the investment sub-categories.

Decomposition of Net FDI Inflows

As can be seen in Figure 3.1, FDI plays a crucial role for the sample of transition countries: in line with the empirical regularities reported by Kirabaeva and Razin (2010) overall net FDI inflows to the sample of countries are persistently above 2% of overall GDP. Net positions for portfolio equity and portfolio debt fluctuate around zero, whereas the other investment category is rather volatile, with relatively high net inflows in recent years.

Razin, Sadka, and Yuen (1999) show theoretically that only FDI has the potential of generating an efficient level of domestic investment, whereas due to information asymmetries between domestic and foreign investors, inflows of portfolio equity or debt augment domestic capital inadequately as domestic overinvestment and foreign underinvestment occur. The problem of information asymmetries is alleviated in the case of FDI as foreign investors obtain actual exercise of management and control. Goldstein and Razin (2006) model the trade-off between more information and higher liquidation costs faced by foreign investors choosing between direct and portfolio investments. The informational advantage for FDI comes at the cost of lower prices when investors need to sell their foreign direct investments prematurely.

The analysis in the previous subsection showed the importance of banking sector reforms for net FDI inflows. Given the well-known presence of foreign banks in the region, it would be interesting to distinguish between banking FDI and non-banking FDI flows. However, these data are not available for our sample of countries. Campos and Kinoshita (2008), using a different methodology and an approximative approach in order to distinguish between gross financial and non-financial FDI inflows, report that financial liberalisation is uniformly positively associated with gross FDI inflows in the transition economies of Eastern Europe. They suggest that financial development is seen as a precondition for maximising the benefits of foreign investments. Next to the direct benefits of raising capital in the host countries, foreign investors might benefit indirectly from more developed financial markets, as local suppliers can avail of better investment opportunities. Thus, banking reforms can be a signal for a functioning supply chain and an overall sophisticated economic environment. In the

[27]The fixed effects are not jointly significant in these estimations, except for column (8).

same vein, Alfaro et al. (2004) suggest that financial development helps countries to exploit FDI more efficiently.

We consider different components of FDI in order to gain additional insights. Using Balance of Payments data from the IMF allows for the classification of FDI into equity capital, reinvested earnings, and other direct investment capital. We calculate FDI equity as the combined value of equity capital and reinvested earnings, and use the residual (classified as 'other') which encompasses intercompany debt transactions for example.

Another source of FDI data is the UNCTAD database. It not only publishes overall FDI flows data, but also data on cross-border mergers and acquisitions (M&As), hence allowing to distinguish between M&As and greenfield (or other) investments. M&As refer to a change in ownership from domestic to foreign investors, while greenfield investments include all financial transfers from a multinational's headquarters to its foreign subsidiary, which may be in the form of equity and loan financing.

In Table 3.3, we show the same regression specification as for overall net financial inflows in the previous subsection, but now separate the aforementioned components of net FDI inflows. Strikingly, the results suggest that the positive correlation between net inflows and a more liberalised banking sector is homogeneous across the different components of FDI.[28]

As these estimations are still guided by our overall net inflows specification, we use a different approach for Table 3.4. In line with recent studies on gross FDI inflows (among others, Campos and Kinoshita, 2008), we include structural determinants of FDI flows in order to observe their effects on net FDI inflows and the coefficients of the financial variables. In contrast to the previous estimation, we drop the lagged net foreign asset position and the age-dependency ratio from the model and incorporate three structural indicators from the EBRD (2008). We use a measure of privatisation, an overall infrastructure indicator, and a corporate governance and enterprise restructuring indicator.[29] A high degree of private ownership and sufficient infrastructure are potentially important factors in attracting foreign investors. The effect of improved corporate governance is not that clear *a priori*; due to the hold-up problem, firms might choose FDI instead of outsourcing if the institutional quality in the host country is low (Antras, 2003), whereas improved institutional quality can of course also help attract FDI inflows.[30]

Comparing columns (2) and (3) in Table 3.4, it stands out that banking sector reforms are significantly positively associated with both the FDI equity and other capital categories. The results also show that among the newly included structural determinants of FDI the

[28] In the FDI-specific analysis we do not report the results of the country fixed effects specification in order to conserve space. First, the country fixed effects are not jointly significant in any of these estimations. Second, as observed in Table 3.2, the results for the financial variables are very similar for the pooled and fixed effects specifications. This is also true for the FDI-specific analysis.

[29] See Section 3.2.2 for details.

[30] Following Campos and Kinoshita, we also included the inflation rate and the percentage of oil and natural gas in total exports. As in their sub-sample for emerging European countries these are not significant nor affecting the coefficients of the other variables.

coefficient of corporate governance reforms is significantly negative (at the 5% level), hinting at the existence of the hold-up problem (column (1)) as laid out above.

In column (4), considering overall FDI data from the UNCTAD database and including 52 observations, we see a highly positive correlation between banking sector reforms (and deeper banking sectors) and net FDI inflows. Also, the privatisation variable is positive and significant (at the 1% level). Comparing columns (5) and (6), it is striking that the banking sector reform coefficient is only significant for the greenfield (thus other) component of FDI. This might reflect the importance of the banking sector in channeling greenfield FDI, whereas banks are avoided as an intermediary in M&A transactions. As a result, banking sector reforms might be more beneficial in the long-run as they are not only associated with changes of ownership from domestic to foreign investors, but also encourage greenfield investments, leading to the development and expansion of new enterprises in the host countries.[31]

Overall, our findings (once we control for FDI-specific structural indicators) show that banking sector reforms tend to work best in attracting greenfield net inflows.

Although the inclusion of additional structural transition indicators stems from the FDI literature, it is possible that these factors are also significantly correlated with net financial flows in the other investment categories. We examine this issue in Table 3.5. As for FDI, we observe a significantly negative (at the 10% level) coefficient on corporate governance reforms for overall net inflows. Apart from this, the only significant transition indicator is found for infrastructure reforms, with a positive sign on portfolio equity. Moreover, the main results of Table 3.2 persist. Additionally, the respective R^2s of the estimations used for Table 3.2 are higher than in Table 3.5 (except for FDI), suggesting that the specification is only more appropriate for FDI.

Gross Flows

As net inflows are the difference between gross capital inflows and outflows, we analyse these separately in Table 3.6.

In both the pooled and fixed effects estimations, we observe that banking reforms are significantly correlated with financial inflows, but not financial outflows, hence explaining the overall positive association with net inflows.[32] For security market reforms, we find that a higher level of reforms is associated with less gross inflows. Stock market capitalisation has a positive correlation with gross inflows and outflows in the pooled estimations, hinting at complementarity of investing domestically and abroad if the domestic stock market is more developed.

[31] The corporate governance variable is insignificant in these specification. Hence, in contrast to Rossi and Volpin (2004), we do not find evidence for more M&A activity in countries with better corporate governance standards.

[32] This most likely reflects the fact that overall net inflows are dominated by FDI and Emerging Europe is a net recipient of FDI.

Turning to the control variables, the fiscal balance is positively associated with both inflows and outflows (except for column (4)). Instead of the NFA position, we use stocks of foreign liabilities and foreign assets, respectively. The existing stock of foreign liabilities plays a negative role in the gross inflows estimations implying that countries which have already accumulated a high foreign liability position receive less inflows. A higher dependency ratio and international trade are positively associated with inflows and outflows.[33]

3.4.2 Annual Data

As outlined in Section 3.3.1 we use a fixed effects estimation with an AR(1) correction term. Compared to the medium-term estimation, annual data allows us to observe short-term dynamics of capital flow patterns in response to unexpected changes in the financial systems.

In this section, we use the same set of regressors as in the medium-term analysis. However, it is important to note that next to the NFA position, we include GDP growth as well as the reform variables in lagged form. This is in particular relevant for the reform variables since the political economy perspective of financial reforms suggests that more financial inflows can trigger financial reforms. While this is less of a problem over the medium-term horizon, we include the lag of the reforms index in these annual estimations in order to avoid potential endogeneity issues.

Our previous finding is confirmed at the annual level: with a higher level of banking reforms, countries attract greater net capital inflows (column (1)). This result is also found using the current account as the dependent variable (column (2)).

Looking at the control variables, a more positive fiscal balance again correlates positively with less net inflows. We find a higher lagged NFA position to be significantly associated with more net inflows. This could reflect the fact that less indebted countries (in net terms) are seen as a safer place to invest in. Also, GDP per capita has a positive sign, indicating that countries attract more financial inflows with increasing economic development. Furthermore, we observe a strong residual effect for the countries that joined the European Union in all estimations.[34]

As in the medium-term estimations, we include a set of additional financial integration variables.[35] However, a significant (positive) coefficient is only found for the Euro Area banking claims variable. This result - consistent with Hermann and Winkler, who estimate annual regressions using the current account as the dependent variable - could indicate the beneficial role of increasing financial integration of the transition countries with their core, which is represented by the Euro Area.[36]

[33] In the fixed effects estimations, the country fixed effects are jointly significant at the 5% level.

[34] These results are confirmed in the current account estimation (2). Aditionally, more openness to trade is associated with higher current account deficits. We compare these results to findings in the literature in the next subsection.

[35] These are not reported in a table to conserve space, but are available upon request.

[36] Moreover, we estimate a pure cross-sectional specification over the years 1996 to 2006. The results clearly

3.4.3 Contribution to the Literature

It is crucial to place the obtained results in context of the existing literature dealing with the link between financial development and net financial flows. As most of the previous research focuses on the current account balance and its medium-term determinants, we focus on these studies as reference points.

Strikingly, only the IMF (2008) employs both dimensions of financial development in an empirical framework. Their study on current account patterns uses interaction terms to factor out the role of financial development for Emerging Europe.[37] Encouragingly, the authors find a negative coefficient on domestic financial reforms (measured by the index of Abiad et al., 2008) in their preferred specification.[38] The authors point out that this effect is not directly related to a measure of European integration. In this paper, we distinguish between banking sector and security market reforms. Moreover, we do not analyse if the effect of financial development in Emerging Europe is different from the rest of the world, but analyse the sources of the within-region cross-country variation in current account patterns.

The major existing papers in this area focus on the dimension of financial deepening. The evidence thus far has been mixed.[39] In our pooled estimation, we find countries with larger stock markets to exhibit higher current account surpluses. In a similar fashion, Gruber and Kamin (2008) test various measures of financial depths in their current account estimations and find stock market turnover to be positively linked with the current account balance in a broad sample, but not in a sample of industrial countries.

Regarding our sets of control variables, we find a positive sign for the fiscal balance. Thus, as usually observed in the literature, we see non-Ricardian behaviour of the transition countries.[40] The (expected) positive coefficient on GDP per capita in the pooled current account estimations is also found by Chinn and Prasad (2003), Gruber and Kamin (2007), and the IMF (2008). In contrast to other findings in the literature (for example Chinn and Prasad, 2003), we do not find a positive coefficient on the lagged net foreign asset position. This could indicate for our sample of countries the net investment position (which is influenced by the net foreign asset position) only contributes marginally to the current account. Chinn and Prasad conjecture that a positive coefficient indicates that countries that have built up a stock of net foreign liabilities tend to be countries with better access to capital markets and are favoured by international investors for a variety of reasons. As we control explicitly for

confirm greater net financial inflows for countries with more reformed banking systems.

[37] However, the study only includes 12 emerging European countries compared to 18 countries in this paper.

[38] However, this index also includes a measure of entry barriers to foreign investors.

[39] Chinn and Prasad (2003) find an increase in current account balances due to financial deepening (as measured by M2), Chinn and Ito (2005) report larger current account deficits due to financial deepening (measured as private credit) interacted with legal system indicators.

[40] Chinn and Prasad (2003), Bussiere, Fratzscher, and Mueller (2006), Gruber and Kamin (2007, 2008), and Chinn and Ito (2006) among others also find a positive coefficient on the fiscal balance in medium-term current account estimations using full samples and various subsamples. Chinn and Prasad (2003) stress that the effect is statistically more robust for emerging countries.

various dimensions of financial development, the relation between the current account and the lagged net foreign asset position found in this paper can be different from the one in Chinn and Prasad.

A comparison of our annual data estimation with the existing literature is difficult as Chinn and Prasad (2003) employ a pooled annual data estimation. In contrast to them, we find a higher lagged NFA position to be significantly associated with lower current account balances. Along with the explanation above, this could reflect the fact that for Emerging Europe less indebted countries (in net terms) are seen as a safer place to invest in. Hermann and Winkler (2008) use an annual data fixed effects specification for a combined set of Eastern European and Asian countries, but their set of independent variables differs from the one commonly used as they drop insignificant control variables from the model. However, they also find a significant negative coefficient on GDP per capita and a significant (positive) coefficient for the Euro Area banking claims variable (see Section 3.4.2).

3.5 Conclusion

This paper contributes to the ongoing debate about global current account imbalances. We analyse the role of financial sector developments in generating net capital inflows for Emerging Europe. As an extension to the literature on international capital flows, we include measures of financial reforms, financial depth, and various indicators of financial integration - thus making it possible to distinguish between various dimensions of financial development. This is of high relevance for understanding why Emerging Europe was able to receive *downhill* capital flows, making a faster convergence to the industrial countries possible.

Our findings demonstrate the importance of financial reforms - banking sector reforms in particular - in attracting net capital inflows for our sample of European transition countries. We observe very persistent additional capital flows to the new EU members, hinting at the unique institutional set-up inside the European Union. Relating to the IMF (2008) where Emerging Europe receives additional net financial inflows due to its high degree of financial liberalisation, we find that more financial liberalisation (in terms of banking sector reforms) is consistent with more net financial inflows within the region. Hence, the most liberalised countries are likely to benefit from improved allocative efficiency which comes from financial liberalisation rather than financial deepening (Abiad et al., 2004).

Among the different investment categories, the importance of FDI and other investments stands out. For both of these investment classes' net inflows, we find a positive association with banking sector reforms. A further in-depth analysis of FDI shows that the significance of banking reforms is robust to the inclusion of FDI-specific variables and works better for greenfield investments (which tend to be long-run oriented) than for mergers and acquisitions.

Distinguishing between gross financial inflows and outflows, we find banking sector reforms

to have a positive correlation with gross inflows. The main medium-term results are strongly confirmed in annual and cross-sectional estimations.

As the time period covered in this paper ends in 2006, the analysis represents a *pre-crisis* study. Though the financial crisis has shown that episodes of huge net capital inflows can be reversed quickly, one has to pay attention to the composition of international capital flows. In particular, it might be encouraging for the transition countries that net FDI inflows have still been rather persistent during the crisis (IMF, 2009). Financial crises may be associated with an an inflow of FDI. This behavior reflects the re-sale FDI phenomenon when foreign investors buy domestic companies at re-sale prices. Krugman (2000) confirms this for FDI inflows during the Asian financial crisis. Wei (2006) notes that sudden reversals are more likely to occur for debt flows (which tend to be procyclical) than for FDI.

On a different note, the standard of banking sectors against which the transition countries are evaluated by the EBRD (2008) might change in the future, with new international regulatory standards potentially coming into operation.

For future research in this area, it will be worth exploring the separate effects of financial sector reforms and financial deepening on net capital flows for other emerging and developing countries. In particular, Emerging Asia might be an interesting case for comparison as this region is running - in contrast to Emerging Europe - persistent current account surpluses. A related approach could be pursued by a further disaggregation of the data - for example, by employing industry level data - in order to shed more light on the different channels of financial reforms.

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Appendix

A1 Data & Sources

Variables	Source
Financial Inflows and Outflows	IMF-BOPS
FDI Flows	UNCTAD
Current Account Balance	IMF-BOPS
Fiscal Balance	EBRD
(Net) External Position	Lane and Milesi-Ferretti (2007a)
Age Dependency Ratio	WDI
GDP per capita	WDI
Trade	WDI
GDP growth	EBRD
Bank Reform Index	EBRD
Security Markets Reform Index	EBRD
Bank Deposits	IMF-IFS
Stock Market Capitalisation	Datastream, S&Ps
Capital Account Openness	Chinn and Ito (2008)
Foreign Banking	World Bank (Claessens et al. (2008))
Bank Claims	BIS
Financial Crisis	Laeven and Valencia (2008)
Structural Transition Indicators	EBRD

A2 Financial Flows Data Classification

Measure of financial flows	IMF BoP name	IMF BoP classification
Overall financial flows		
Net Financial Inflows	Financial account	2.B
Outflows FDI	Direct Investment Abroad	2.B.1.1
Inflows FDI	Direct Investment in reporting economy	2.B.1.2
Net Inflows FDI	Direct Investment	2.B.1
Outflows Portfolio Equity	Portfolio Investment Assets Equity securities	2.B.2.1.1
Inflows Portfolio Equity	Portfolio Investment Liabilities Equity securities	2.B.2.2.1
Net Inflows Portfolio Equity	*(Inflows Portfolio Equity - Outflows Portfolio Equity)*	
Outflows Portfolio Debt	Portfolio Investment Assets Debt securities	2.B.2.1.2
Inflows Portfolio Debt	Portfolio Investment Liabilities Debt securities	2.B.2.2.2
Net Inflows Portfolio Debt	*(Inflows Portfolio Debt - Outflows Portfolio Debt)*	
Outflows Other Investment	Other Investment Assets	2.B.3.1
Inflows Other Investment	Other Investment Liabilities	2.B.3.2
Net Inflows Other Investment	Other Investment	2.B.3
Outflows Reserve Assets	Reserve Assets	2.B.4
FDI-specific financial flows		
Outflows FDI Equity capital	Direct Investment Abroad Equity capital	2.B.1.1.1
Inflows FDI Equity capital	Direct Investment in reporting economy Equity capital	2.B.1.2.1
Outflows FDI Reinvested earnings	Direct Investment Abroad Reinvested earnings	2.B.1.1.2
Inflows FDI Reinvested earnings	Direct Investment in reporting economy Reinvested earnings	2.B.1.2.2
Outflows FDI Other capital	Direct Investment Abroad Other capital	2.B.1.1.3
Inflows FDI Other capital	Direct Investment in reporting economy Other capital	2.B.1.2.3
Current account measure		
Current Account Balance	Current Account	1.

Figure 3.1: Net financial inflows (ratio to GDP)

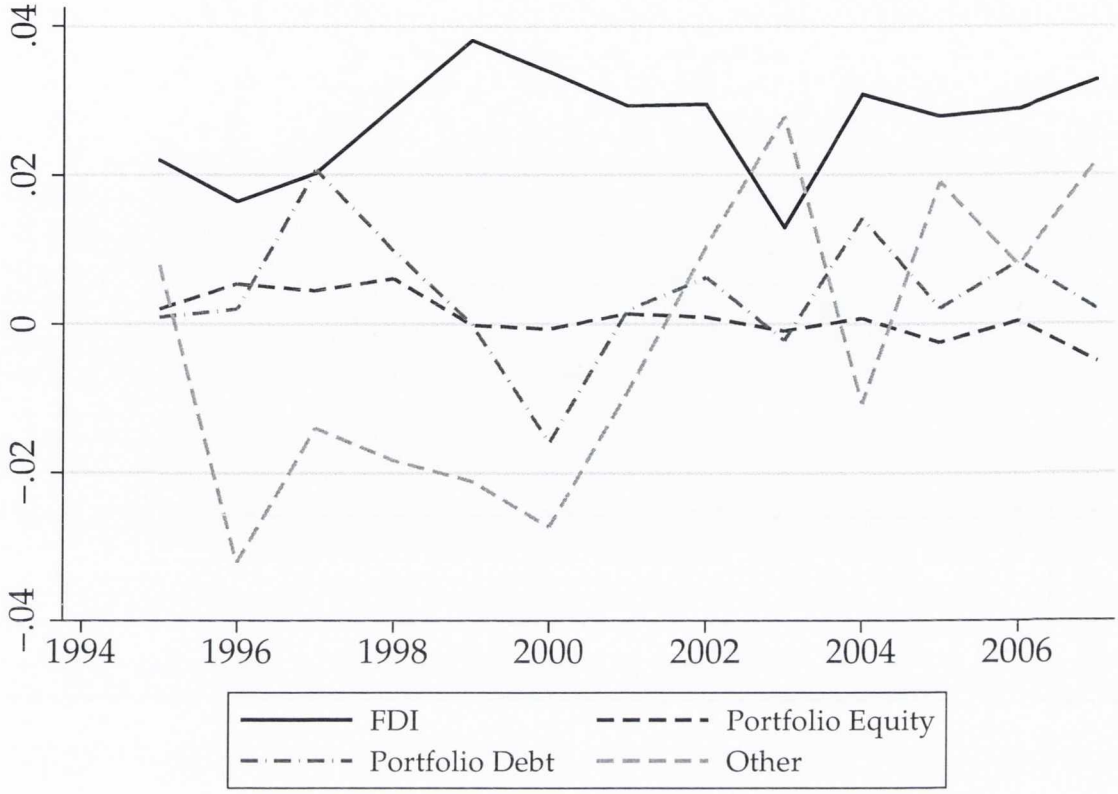

Table 3.1: Medium-term specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Net Inflows						Current Acount	
Bank Reform Index	0.191	0.219	0.194	0.189	0.217	0.211	-0.156	-0.215
	[0.042]***	[0.101]**	[0.065]*	[0.044]***	[0.107]**	[0.061]*	[0.045]***	[0.088]**
Security Markets Reform Index	0.066	-0.046	-0.046	0.049	-0.046	-0.059	-0.071	0.007
	[0.052]	[0.100]	[0.185]	[0.053]	[0.103]	[0.061]	[0.052]	[0.080]
Bank Deposits	-0.108	-0.003	-0.107	-0.104	-0.003	-0.104	0.036	-0.062
	[0.040]***	[0.096]	[0.116]	[0.041]**	[0.100]	[0.034]*	[0.039]	[0.082]
Stock Market Capitalisation	-0.026	-0.090	0.020	-0.015	-0.093	0.195	0.118	0.073
	[0.048]	[0.075]	[0.152]	[0.050]	[0.072]	[0.043]**	[0.045]**	[0.062]
Fiscal Balance	-0.137	0.039	-0.229	-0.130	0.030	-0.046	0.256	-0.077
	[0.178]	[0.213]	[0.601]	[0.180]	[0.221]	[0.158]	[0.149]*	[0.182]
L. NFA	0.053	0.021	-0.018	0.041	0.018	0.062	-0.037	0.005
	[0.026]*	[0.041]	[0.129]	[0.030]	[0.043]	[0.037]	[0.026]	[0.037]
Dependency Ratio	0.179	1.053	-0.011	0.108	1.031	-0.044	-0.113	-0.500
	[0.132]	[0.324]***	[0.325]	[0.139]	[0.336]***	[0.110]	[0.107]	[0.266]*
log GDP per capita	-0.038	0.040	-0.025	-0.042	0.036	-0.094	0.048	-0.064
	[0.014]***	[0.066]	[0.042]	[0.013]***	[0.072]	[0.011]**	[0.013]***	[0.059]
Trade	0.047	0.017	0.037	0.044	0.014	0.084	-0.024	-0.042
	[0.018]**	[0.070]	[0.047]	[0.018]**	[0.074]	[0.014]**	[0.017]	[0.065]
GDP growth	-0.071	-0.302	0.358	-0.019	-0.300	0.316	-0.022	0.311
	[0.160]	[0.168]*	[0.808]	[0.173]	[0.177]*	[0.202]	[0.140]	[0.157]*
Size (log Population)	-0.008	-0.395	-0.007	-0.007	-0.412	0.009	0.015	0.312
	[0.005]*	[0.222]*	[0.011]	[0.005]	[0.244]*	[0.005]	[0.005]***	[0.227]
EU membership	0.051	0.030	0.145	0.057	0.032	0.094	-0.037	-0.020
	[0.021]**	[0.024]	[0.152]	[0.021]***	[0.025]	[0.063]	[0.017]**	[0.021]
Debt Crisis				-0.046	-0.006	-0.335		
				[0.021]**	[0.023]	[0.034]**		
Currency Crisis				-0.002	-0.007	-0.109		
				[0.016]	[0.012]	[0.051]		
Banking Crisis				0.012	0.005	-0.002		
				[0.016]	[0.014]	[0.026]		
Observations	72	72	72	72	72	72	72	72
R-squared	0.67	0.86	0.84	0.69	0.86	0.91	0.74	0.89
Country Fixed Effects	no	yes	no	no	yes	no	no	yes

Notes: The dependent variables (all as ratios to GDP) are net financial inflows (1) - (6), and the current account balance (7) - (8), respectively; the explanatory variables are the bank reforms index, the security market reforms index, the ratio of banking deposits to GDP, the ratio of stock market capitalisation to GDP, the fiscal balance (as a ratio to GDP), lagged net foreign assets (as a ratio to GDP), the age-dependency ratio, GDP per capita (in natural log form), the sum of exports and imports (as a ratio to GDP), real GDP growth, population (in natural log form), and an EU membership dummy. In columns (4) - (6) financial crises dummies are used. Non-overlapping three-year averages for each country and variable are used. Estimation by least squares with heteroskedasticity robust standard errors (in parentheses) and involving time fixed effects (1), (4), and (7) and country and time fixed effects ((2), (5), and (8)). In columns (3) and (6) a between estimator is employed. Time period: 1995-2006.
* significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 3.2: Medium-term specification: decomposition of net financial inflows

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	P. Equity	**FDI**	**P. Debt**	**Other**	**P. Equity**	**FDI**	**P. Debt**	**Other**
Bank Reform Index	0.014	0.162	-0.004	0.063	0.011	0.180	-0.022	0.022
	[0.012]	[0.031]***	[0.028]	[0.036]*	[0.027]	[0.067]**	[0.059]	[0.086]
Security Markets Reform Index	0.015	-0.050	0.030	-0.016	0.020	-0.013	0.047	-0.067
	[0.012]	[0.036]	[0.024]	[0.047]	[0.030]	[0.060]	[0.055]	[0.084]
Bank Deposits	-0.008	0.056	-0.026	-0.047	0.000	0.183	-0.142	0.136
	[0.011]	[0.029]*	[0.025]	[0.037]	[0.038]	[0.080]**	[0.067]**	[0.082]
Stock Market Capitalisation	0.012	-0.070	-0.020	0.039	0.040	-0.108	0.064	-0.003
	[0.015]	[0.030]**	[0.028]	[0.042]	[0.026]	[0.052]**	[0.038]	[0.080]
Fiscal Balance	-0.037	0.200	-0.313	0.367	-0.044	0.060	-0.333	0.640
	[0.058]	[0.121]	[0.112]***	[0.170]**	[0.076]	[0.160]	[0.109]***	[0.227]***
L. NFA	0.013	0.005	0.002	0.020	0.029	0.039	0.007	-0.038
	[0.011]	[0.023]	[0.017]	[0.026]	[0.021]	[0.025]	[0.021]	[0.036]
Dependency Ratio	0.003	0.070	-0.081	0.421	-0.086	-0.163	-0.079	0.910
	[0.023]	[0.076]	[0.050]	[0.122]***	[0.115]	[0.232]	[0.221]	[0.251]***
log GDP per capita	-0.005	-0.024	0.005	0.010	-0.021	-0.123	0.009	0.073
	[0.005]	[0.010]**	[0.008]	[0.013]	[0.024]	[0.040]***	[0.042]	[0.041]*
Trade	0.003	0.030	0.007	0.010	-0.009	-0.054	-0.013	0.103
	[0.004]	[0.010]***	[0.008]	[0.019]	[0.013]	[0.047]	[0.038]	[0.058]*
GDP growth	-0.019	0.048	-0.026	0.129	-0.046	0.012	-0.069	-0.032
	[0.032]	[0.109]	[0.072]	[0.118]	[0.070]	[0.126]	[0.106]	[0.175]
Size (log Population)	-0.001	0.011	0.001	-0.009	-0.047	-0.117	-0.257	-0.376
	[0.001]	[0.004]***	[0.003]	[0.004]*	[0.081]	[0.172]	[0.179]	[0.211]*
EU membership	-0.011	0.003	-0.008	0.036	-0.004	0.022	-0.009	0.001
	[0.005]**	[0.013]	[0.010]	[0.020]*	[0.006]	[0.017]	[0.012]	[0.020]
Observations	66	72	66	72	66	72	66	72
R-squared	0.32	0.51	0.31	0.58	0.5	0.75	0.61	0.84
Country Fixed Effects	no	no	no	no	yes	yes	yes	yes

Notes: The dependent variables (all as ratios to GDP) are net inflows portfolio equity ((1) and (5)), net inflows FDI ((2) and (6)), net inflows portfolio debt ((3) and (7)), and net inflows other investment ((4) and (8)), respectively; for the explanatory variables, please refer to Table 3.1. Non-overlapping three-year averages for each country and variable are used. Estimation by least squares with heteroskedasticity robust standard errors (in parentheses) and involving time fixed effects, and country and time fixed effects ((5) - (8)). Time period: 1995-2006.
* significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 3.3: Medium-term specification: decomposition of net FDI inflows

	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	**Equity**	**Other**	**Overall**	**M&A**	**Other**
Bank Reform Index	0.170	0.108	0.063	0.218	0.091	0.127
	[0.034]***	[0.026]***	[0.016]***	[0.068]***	[0.048]*	[0.047]**
Security Markets Reform Index	-0.078	-0.020	-0.044	-0.102	-0.092	-0.010
	[0.040]*	[0.030]	[0.026]	[0.057]*	[0.053]*	[0.052]
Bank Deposits	0.039	0.043	-0.007	0.215	0.096	0.120
	[0.030]	[0.026]	[0.015]	[0.046]***	[0.042]**	[0.038]***
Stock Market Capitalisation	-0.078	-0.069	-0.014	-0.043	-0.050	0.008
	[0.032]**	[0.028]**	[0.022]	[0.043]	[0.047]	[0.043]
Fiscal Balance	0.283	0.087	0.195	0.247	0.127	0.120
	[0.138]**	[0.118]	[0.109]*	[0.160]	[0.143]	[0.140]
L. NFA	-0.008	0.015	-0.015	-0.010	0.002	-0.012
	[0.025]	[0.024]	[0.014]	[0.033]	[0.020]	[0.026]
Dependency Ratio	0.050	-0.032	0.082	0.476	0.506	-0.030
	[0.084]	[0.072]	[0.061]	[0.240]*	[0.317]	[0.278]
log GDP per capita	-0.016	-0.021	0.001	-0.061	0.011	-0.072
	[0.011]	[0.011]*	[0.006]	[0.028]**	[0.028]	[0.025]***
Trade	0.034	0.026	0.011	-0.008	-0.005	-0.003
	[0.011]***	[0.011]**	[0.006]*	[0.015]	[0.011]	[0.013]
GDP growth	-0.101	-0.162	0.032	0.090	-0.218	0.308
	[0.134]	[0.102]	[0.114]	[0.125]	[0.162]	[0.153]*
Size (log Population)	0.013	0.005	0.007	0.010	0.009	0.001
	[0.004]***	[0.003]*	[0.003]***	[0.006]	[0.005]*	[0.005]
EU membership	0.001	0.003	-0.002	-0.001	-0.003	0.002
	[0.014]	[0.013]	[0.009]	[0.017]	[0.016]	[0.017]
Observations	64	64	64	52	52	52
R-squared	0.53	0.52	0.32	0.68	0.40	0.58

Notes: The dependent variables (all as ratios to GDP) are net inflows FDI (used only for those countries where the balance of payment decomposition of FDI flows is available) (1), the sum of net inflows FDI Equity capital and net inflows FDI Reinvested Earnings (2), net inflows FDI Other capital (3), net inflows FDI (from the UNCTAD database) (4), net inflows FDI Mergers and Acquisitions (from the UNCTAD database) (5) and net inflows FDI Other (from the UNCTAD database) (6), respectively; for the explanatory variables, please refer to Table 3.1. Non-overlapping three-year averages for each country and variable are used. Estimation by least squares with heteroskedasticity robust standard errors (in parentheses) and involving time fixed effects. Time period: 1995-2006.
* significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 3.4: Medium-term specification: decomposition of net FDI inflows

	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	Equity	Other	Overall	M&A	Other
Bank Reform Index	0.160	0.081	0.079	0.189	0.036	0.153
	[0.059]***	[0.039]**	[0.043]*	[0.058]***	[0.053]	[0.046]***
Security Markets Reform Index	-0.031	-0.041	0.013	-0.010	-0.030	0.020
	[0.050]	[0.040]	[0.029]	[0.055]	[0.050]	[0.050]
Bank Deposits	0.059	0.051	0.004	0.205	0.082	0.123
	[0.032]*	[0.029]*	[0.018]	[0.039]***	[0.037]**	[0.032]***
Stock Market Capitalisation	-0.095	-0.071	-0.027	-0.051	-0.056	0.005
	[0.032]***	[0.032]**	[0.022]	[0.046]	[0.050]	[0.047]
Infrastructure	0.013	0.007	0.005	0.002	0.009	-0.007
	[0.014]	[0.010]	[0.008]	[0.013]	[0.010]	[0.011]
Privatisation	0.059	0.001	0.052	0.306	0.149	0.158
	[0.054]	[0.037]	[0.040]	[0.083]***	[0.084]*	[0.072]**
Corporate Governance	-0.032	-0.001	-0.029	-0.024	-0.009	-0.015
	[0.018]*	[0.015]	[0.015]*	[0.018]	[0.015]	[0.017]
Fiscal Balance	0.199	0.109	0.102	0.268	0.061	0.207
	[0.125]	[0.123]	[0.088]	[0.145]*	[0.133]	[0.114]*
log GDP per capita	-0.020	-0.014	-0.007	-0.122	-0.037	-0.085
	[0.007]***	[0.006]**	[0.005]	[0.019]***	[0.025]	[0.022]***
Trade	0.032	0.027	0.008	-0.027	-0.015	-0.013
	[0.011]***	[0.010]**	[0.006]	[0.016]*	[0.014]	[0.016]
GDP growth	-0.050	-0.163	0.078	-0.177	-0.287	0.111
	[0.136]	[0.111]	[0.100]	[0.182]	[0.164]*	[0.189]
Size (log Population)	0.009	0.006	0.004	-0.003	-0.003	0.000
	[0.004]**	[0.003]*	[0.002]*	[0.003]	[0.005]	[0.005]
EU membership	0.006	0.000	0.004	0.003	-0.007	0.009
	[0.013]	[0.013]	[0.010]	[0.018]	[0.016]	[0.018]
Observations	64	64	64	52	52	52
R-squared	0.56	0.52	0.36	0.76	0.40	0.62

Notes: The dependent variables (all as ratios to GDP) are net inflows FDI (used only for those countries where the balance of payment decomposition of FDI flows is available), the sum of net inflows FDI Equity capital and net inflows FDI Reinvested Earnings (2), net inflows FDI Other capital (3), net inflows FDI (from the UNCTAD database) (4), net inflows FDI Mergers and Acquisitions (from the UNCTAD database) (5) and net inflows FDI Other (from the UNCTAD database) (6), respectively; the explanatory variables are the bank reforms index, the security market reforms index, the ratio of banking deposits to GDP, the ratio of stock market capitalisation to GDP, an infrastructure transition indicator, a privatisation transition indicator, a corporate governance transition indicator, the fiscal balance (as a ratio to GDP), GDP per capita (in natural log form), the sum of exports and imports (as a ratio to GDP), real GDP growth, population (in natural log form), and an EU membership dummy. Non-overlapping three-year averages for each country and variable are used. Estimation by least squares with heteroskedasticity robust standard errors (in parentheses) and involving time fixed effects. Time period: 1995-2006.
* significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 3.5: Medium-term specification: decomposition of net financial inflows

	(1)	(2)	(3)	(4)	(5)
	Overall	**P. Equity**	**FDI**	**P. Debt**	**Other**
Bank Reform Index	0.192	-0.005	0.133	-0.012	0.074
	[0.060]***	[0.016]	[0.046]***	[0.039]	[0.066]
Security Markets Reform Index	0.076	0.001	-0.010	0.026	0.012
	[0.059]	[0.017]	[0.044]	[0.037]	[0.062]
Bank Deposits	-0.082	-0.004	0.073	-0.024	-0.071
	[0.041]*	[0.010]	[0.029]**	[0.025]	[0.039]*
Stock Market Capitalisation	-0.044	0.008	-0.101	-0.013	-0.003
	[0.049]	[0.018]	[0.031]***	[0.030]	[0.052]
Infrastructure	0.004	0.005	0.018	-0.004	-0.012
	[0.016]	[0.002]*	[0.011]	[0.008]	[0.018]
Privatisation	0.050	0.010	0.074	0.020	0.028
	[0.078]	[0.016]	[0.049]	[0.040]	[0.074]
Corporate Governance	-0.037	-0.003	-0.037	0.001	-0.004
	[0.020]*	[0.006]	[0.017]**	[0.014]	[0.023]
Fiscal Balance	-0.244	-0.035	0.138	-0.234	0.100
	[0.189]	[0.054]	[0.103]	[0.095]**	[0.209]
log GDP per capita	-0.024	0.000	-0.023	0.011	0.001
	[0.011]**	[0.002]	[0.007]***	[0.005]**	[0.011]
Trade	0.034	0.002	0.029	0.011	-0.013
	[0.016]**	[0.004]	[0.009]***	[0.008]	[0.017]
GDP growth	-0.012	-0.016	0.044	-0.080	0.305
	[0.172]	[0.033]	[0.093]	[0.061]	[0.146]**
Size (log Population)	-0.011	-0.001	0.008	0.002	-0.013
	[0.005]**	[0.002]	[0.003]**	[0.003]	[0.005]***
EU membership	0.054	-0.013	0.007	-0.008	0.038
	[0.019]***	[0.005]**	[0.013]	[0.010]	[0.019]*
Observations	72	66	72	66	72
R-squared	0.65	0.3	0.57	0.3	0.48

Notes: The dependent variables (all as ratios to GDP) are net financial inflows (1), net inflows portfolio equity (2), net inflows FDI (3), net inflows portfolio debt (4), and net inflows other investment (5), respectively; for the explanatory variables, please refer to Table 3.4. Non-overlapping three-year averages for each country and variable are used. Estimation by least squares with heteroskedasticity robust standard errors (in parentheses) and involving time fixed effects. Time period: 1995-2006.

* significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 3.6: Medium-term financial inflows and outflows

	(1)	(2)	(3)	(4)
	Inflows		Outflows	
Bank Reform Index	0.312	0.346	0.064	0.098
	[0.053]***	[0.141]**	[0.048]	[0.090]
Security Markets Reform Index	-0.128	-0.205	-0.073	-0.164
	[0.058]**	[0.120]*	[0.069]	[0.085]*
Bank Deposits	0.038	0.289	-0.002	0.174
	[0.053]	[0.116]**	[0.038]	[0.113]
Stock Market Capitalisation	0.133	0.065	0.217	0.079
	[0.072]*	[0.092]	[0.079]***	[0.095]
Fiscal Balance	0.652	0.613	0.466	0.145
	[0.272]**	[0.295]**	[0.239]*	[0.231]
L. Foreign Liabilities	-0.045	-0.056		
	[0.022]**	[0.031]*		
L. Foreign Assets			-0.029	-0.072
			[0.034]	[0.059]
Dependency Ratio	0.819	1.172	0.498	1.092
	[0.163]***	[0.407]***	[0.147]***	[0.382]***
log GDP per capita	-0.005	0.111	0.020	0.191
	[0.015]	[0.088]	[0.014]	[0.066]***
Trade	0.054	-0.011	0.036	-0.018
	[0.022]**	[0.067]	[0.018]*	[0.057]
GDP growth	0.194	-0.131	-0.012	0.194
	[0.200]	[0.280]	[0.132]	[0.236]
Size (Pop.)	0.004	-0.231	0.005	0.931
	[0.006]	[0.458]	[0.006]	[0.339]***
EU membership	0.020	0.028	0.008	0.015
	[0.030]	[0.024]	[0.024]	[0.018]
Observations	64	64	65	65
R-squared	0.76	0.89	0.52	0.82
Country Fixed Effects	no	yes	no	yes

Notes: The dependent variables (all as ratios to GDP) are gross financial inflows (1) - (2), and gross financial outflows (3) - (4), respectively; the explanatory variables are the bank reforms index, the security market reforms index, the ratio of banking deposits to GDP, the ratio of stock market capitalisation to GDP, the fiscal balance (as a ratio to GDP), lagged foreign liabilities (as a ratio to GDP) in (1) - (2), lagged foreign assets (as a ratio to GDP) in (3) - (4), the age-dependency ratio, GDP per capita (in natural log form), the sum of exports and imports (as a ratio to GDP), real GDP growth, population (in natural log form), and an EU membership dummy. Non-overlapping three-year averages for each country and variable are used. Estimation by least squares with heteroskedasticity robust standard errors (in parentheses) and involving time fixed effects, and country and time fixed effects ((2), and (4)). Time period: 1995-2006 (data availability varies by country).
* significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 3.7: Annual specification

	(1)	(2)
	Net Inflows	Current Account
L. Bank Reform Index	0.085	-0.087
	[0.039]**	[0.036]**
L. Security Markets Reform Index	0.020	-0.052
	[0.037]	[0.034]
Bank Deposits	0.036	-0.053
	[0.058]	[0.051]
Stock Market Capitalisation	-0.046	0.032
	[0.045]	[0.040]
Fiscal Balance	-0.310	0.188
	[0.108]***	[0.102]*
L. NFA	0.086	-0.055
	[0.023]***	[0.024]**
Dependency Ratio	0.505	-0.041
	[0.235]**	[0.239]
log GDP per capita	0.075	-0.090
	[0.043]*	[0.038]**
Trade	0.021	-0.047
	[0.025]	[0.024]*
L. GDP growth	-0.050	0.029
	[0.061]	[0.057]
Size (log Population)	-0.262	0.202
	[0.175]	[0.190]
EU membership	0.049	-0.040
	[0.015]***	[0.014]***
Observations	216	216
Number of countries	18	18
R-squared	0.64	0.68

Notes: The dependent variables (all as ratios to GDP) are net financial inflows (1), and the current account balance (2), respectively; the explanatory variables are the lagged bank reforms index, the lagged security market reforms index , the ratio of banking deposits to GDP, the ratio of stock market capitalisation to GDP, the fiscal balance (as a ratio to GDP), lagged net foreign assets (as a ratio to GDP), the age-dependency ratio, GDP per capita (in natural log form), the sum of exports and imports (as a ratio to GDP), lagged real GDP growth, population (in natural log form), and an EU membership dummy. Annual panel data estimation with AR(1) correlated disturbances, heteroskedasticity robust standard errors (in parentheses), and involving country and time fixed effects. R-squared refers to the within-group measure. Time period: 1995-2006.
* significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Chapter 4

Financial Remoteness and the Net External Position

4.1 Introduction

This paper integrates two major research areas - the analysis of external imbalances and studies of the geographical determinants of cross-border investment. We investigate if a country's geographical location affects its ability to raise net external funding.

The net external position of a country is an important steady-state variable which is crucial in order to understand short-term capital flows. As shown by Lane and Milesi-Ferretti (2001a 2001b, and 2002), long-term fundamentals such as GDP per capita, the demographic structure, the level of public debt, and country size are important determinants in explaining the level of a country's net external position. These fundamentals help explain why countries are persistent net creditors or net debtors. Theoretically, net external positions ensure that capital is allocated to the most productive nations. Moreover, intertemporal consumption smoothing works through this channel internationally.

The role of geographical and bilateral factors for a country's net external position is largely unexplored. In the literature on bilateral asset trade, it is well established that geography matters. For example, Lane and Milesi-Ferretti (2008) and Portes and Rey (2005) show that bilateral distance and other proxies for informational asymmetries such as common language, colonial ties, and currency unions are crucial in explaining bilateral asset holdings and flows, respectively. Daude and Stein (2007) find that the difference in time zones is also important for bilateral (foreign direct) investments. Thus, asset trade can be explained by gravity models that are very similar to models of bilateral trade, implying a home bias or rather a proximity bias.

There is evidence for a proximity bias in the financial sector due to differences in access to financial services and information asymmetries that are increasing in distance. Coval and

Moskowitz (1999, 2001) show that returns of fund managers in the United States are higher from investing in firms in close proximity. Also financial analysts tend to be more accurate in their assessments the closer they are located to a firm (Malloy, 2005). Petersen and Rajan (2002) find that borrower quality increases with distance, as banks are unwilling to lend at great distances to problem borrowers whose loans would require more active monitoring.

We build on the literature above by investigating how geographic and bilateral factors influence the net external position of a country. The determinants of bilateral holdings can affect gross aggregate positions: as we expect a financially-remote country to be less integrated with the rest of the world, it might receive less inward capital flows which could translate into problems in generating net external funding.

Based on the idea of increasing financial intermediation costs with distance, Rose and Spiegel (2009) introduce a unilateral concept of distance, namely international financial remoteness. They find that countries that are remote from financial activity (defined by the closest distance to one of the world's major financial centres - London, New York, and Tokyo) are systemically more volatile in terms of output and consumption growth. We use a similar concept in order to obtain remoteness measures for each country, namely the minimum distance and minimum time zone difference to one of the eight largest creditor countries that are consequently the major providers of external funding. We include these financial remoteness measures in standard net external position estimations.

Going beyond measures of distance there are more bilateral concepts potentially affecting net external positions. As we carry out our analysis in a unilateral framework, we apply Baicker's (2005) notion of neighbourliness which she uses to examine spillovers of fiscal policy among US states. We apply her idea of geographic contiguity and use further concepts from the bilateral asset trade literature in a unilateral framework. Starting from bilateral datasets, we construct composite measures of - for instance - financial openness of neighbour countries and test their relevance for the net external position.

Countries might also be able to participate in world financial or goods markets by being integrated with a 'core' country. This notion, dating back to Baumol (1986), postulates that specific convergence clubs of a core (leader) and a periphery (converging countries) exhibit spillovers from the core to the periphery via extensive trade and financial linkages. We apply the concepts of bilateral financial and trade linkages by identifying a core country and the level of integration with this core country for each economy in our sample and investigate if integration with the core has an impact on net external funding.

The theoretical framework of this paper is shaped by the models of Obstfeld and Rogoff (2001) and Martin and Rey (2004). In both models, (asset) trade costs induce home bias in financial holdings. Trade costs in the models represent transaction and information costs in a broader sense. Fazio, MacDonald, and Melitz (2008) find strong empirical support for Obstfeld's and Rogoff's hypothesis that trade costs are the key to explaining the Feldstein-

Horioka puzzle. They find this to be consistent with persistent net external positions and trade balances as observed by Lane and Milesi-Ferretti (2002).

There are no strong theoretical or empirical priors about the role of financial remoteness and other bilateral factors for net external positions. From the findings by Lane and Milesi-Ferretti (2008), Portes and Rey (2005), and Daude and Stein (2007) we know that geographic factors are important for bilateral asset trade. Consequently, it is of high interest to analyse the impact of these factors for a country's net external wealth.

The remainder of the paper is organised as follows: in Section 2 theoretical issues are raised, followed by the empirical strategy in Section 3. The empirical results are presented in Section 4, and Section 5 concludes.

4.2 Theoretical Issues

Obstfeld and Rogoff (2001) show that trade costs can have large effects on macroeconomic phenomena. Obviously, bilateral factors such as geographical barriers imply higher trade and transaction costs. In their model, Obstfeld and Rogoff demonstrate that higher trade costs in goods can explain home bias in equity holdings (representing overall asset holdings).

Martin and Rey (2004) focus on incomplete asset markets and transaction (iceberg) costs in financial markets. In their framework, assets are endogenously created leading to larger countries having larger asset markets, while a reduction in financial trade costs leads to more international asset trade. Frictions in asset trade through asymmetric information costs between home and foreign agents induce home bias in equity holdings. The gravity models of Milesi-Ferretti (2008) and Portes and Rey (2005) support these theories by finding a significant role for standard geographic determinants as well as informational distance proxies.

If we drop the assumption of symmetric transaction costs across all countries, we can speculate about the impact of geographic and bilateral factors on the net external position. As each country exhibits a unique geographic position in the world, financial trade costs vis-a-vis the rest of the world (as for instance proxied by the degree of financial remoteness) are of an idiosyncratic nature. This may entail distinctive foreign asset and liability positions for each country and the emergence of external imbalances.

Based on the theoretical and empirical asset trade literature, a financially-remote country is less likely to be involved substantially in international financial trade. However, for a small open economy, an asymmetry in the way financial remoteness affects foreign assets and liabilities is probable: on the capital outflow side, geographic barriers are more likely to be overcome by a 'remote' country actively seeking to pursue an internationally-oriented investment strategy (for example in the form of a national pension fund). On the inflow side, however, remoteness can translate into problems in generating net external funding. For a

small open remote economy, it might be very problematic to come into the focus of international investors as well as to receive substantial investments given increasing information costs and informational asymmetries with distance.

Put differently, financial remoteness functions as an asymmetric tax that is levied on the return on foreign liabilities, but not on the return on foreign assets. Consequently, the foreign asset accumulation is not (or only to a lesser extent) distorted by financial remoteness, whereas foreign liabilities are subject to a 'remoteness' tax.

For a small open economy this asymmetry results in a more positive net external position (hence a lower, less negative, net foreign liability position). For remote countries that seek net external funding based on their macroeconomic fundamentals, a disadvantageous geographic location can thus be an impediment to achieving the desired net external position.

We test this formally by including variables from the bilateral concepts of financial remoteness, neighbourliness, and convergence clubs in the net external position estimations framework.

4.3 Empirical Strategy

4.3.1 Specification

The empirical framework focuses on a static long-run relation using a cross-sectional approach. We include the net external position (as a ratio to GDP) as an average over the period of 2005-2007. The control variables are measured in 2005 values. As there is not much time-series variation in many of our bilateral variables, a cross-sectional approach seems more appropriate than a panel estimation. Various bilateral concepts are introduced in the estimation. We estimate the regression specifications by least squares using heteroskedasticity robust standard errors:

$$NFA_i = \alpha + \beta Bilateral_i + \gamma \mathbf{X}_i + e_i \tag{4.1}$$

where $Bilateral_i$ represents various bilateral concepts. Specifically, we include international financial remoteness, various measures of neighbourliness as well as financial and trade integration indicators based on the convergence clubs concept (see Section 4.3.3 for details). $\mathbf{X}_i$ is a set of control variables building on Lane and Milesi-Ferretti (2001a 2001b, and 2002) and comprises the natural logarithm of GDP per capita (in PPP terms using constant international dollars), the demographic structure, the level of public debt, and the natural logarithm of population size (see Section 4.3.2 for details).

We benefit from the updated and extended version of the dataset on external positions constructed by Lane and Milesi-Ferretti (2007). This dataset covers 178 economies. After matching it with the explanatory variables (see Appendix A1 for details on the country sample and data sources), we are left with a cross-section of 153 countries that we reduce

to 149 countries by excluding countries that have a net external position that is larger than 200% of GDP (Kuwait, Lybia, Hong Kong) or smaller than -200% of GDP (Guinea-Bissau).

We use both the full sample of 149 countries, as well as a narrow sample of 119 countries that excludes the 30 most advanced countries (in terms of GDP per capita) as we expect differences in the way the bilateral concepts affect net external funding based on the stage of development of an economy.[1] Conceptually, less advanced countries might be more reliant on external funding in order to facilitate investments that lead to higher economic growth and convergence with the group of advanced countries. For the group of advanced countries, we expect this relation to be less pronounced. First, these countries are more likely to be well-integrated into the world economy, hence raising external capital should be less difficult even for remote advanced countries.[2] Second, given that these countries have reached a high level of economic development, they are likely to have more savings and less investments, leading to less demand for net external funding. In the narrow sample, 100 out of 119 (84%) countries are net debtors, whereas only 19 out of 30 (63%) advanced countries are net debtors. Considering a net liability position of 0.25% of GDP as a cut-off point, we find 66% of the less developed sample to be even more indebted, whereas only 20% of the advanced countries exhibit a higher net liability position. Third, in the less advanced sample, the major international creditor countries and financial centres (see Section 4.3.3) are excluded. This avoids a potential blurring of these estimations, as for example for the United States the impact of financial remoteness might be different compared to other countries as it is one of the eight major gross creditor countries and New York is one of the world's three major financial centres.

Less advanced countries are expected to be 'natural' net debtor countries that are in need of *downhill* international capital flows. Given the theoretical considerations presented in Section 4.2, international financial remoteness might be a severe impediment to receiving the desired level of net external funding for this group of countries.

4.3.2 Control Variables

We build our empirical specifications on previous work by Lane and Milesi-Ferretti (2001a, 2001b, and 2002).

Lane and Milesi-Ferretti find a positive relation between net foreign assets and GDP per capita in cross-sectional estimations. Various channels can explain this result: if an economy

[1] This corresponds to excluding countries from the reduced sample that are above the 80th percentile in terms of GDP per capita. All of these belong to the group of high-income countries as defined by the World Bank's World Development Indicators. See Appendix A1 for a list of these countries.

[2] Australia and New Zealand are both very remote countries while also being substantial net debtors with net external positions of -61% and -89%, respectively, over the period of 2005-2007. This circumstance supports the hypothesis of rich countries being less affected by financial remoteness. As a robustness check we also include Australia and New Zealand in the less advanced sample (based on their large net foreign liability positions), but find the results of the empirical analysis to hold nonetheless.

grows richer, the marginal product of capital (and hence domestic investment) decreases. A rise in income can also be associated with more domestic savings. Both factors can lead to more investments abroad.

Furthermore, Lane and Milesi-Ferretti (2002) show that demography is a very important determinant of net external positions. We employ the entire age distribution in our empirical work as proposed by Fair and Dominguez (1991) and Higgins (1998). This is crucial, as for instance, a relatively young workforce may be associated with relatively low savings and high investments whereas an older workforce may be associated with a rise in the net foreign asset position, as saving for retirement becomes more urgent and domestic investment falls. Countries with a high age-dependency ratio might start accumulating overseas assets to generate international investment income. A high youth dependency ratio may be associated with a high investment rate (to finance social infrastructure investments). Consequently, we follow Lane and Milesi-Ferretti (2002) and use the entire age distribution of a country in order to account for the different demographic channels. We restrict the coefficients on the population share variables to lie along a cubic polynomial, so that only three composite demographic variables are entered into the regression specification (see Appendix A2 for details).

We also consider the level of public debt. Lane and Milesi-Ferretti (2002) find a significant negative coefficient on the level of public debt for developing countries. This non-Ricardian behaviour implies that higher levels of public debt are not fully offset by an increase in private asset accumulation.[3] Hence, more public debt might be associated with a decline in the net external position.

In addition, we control for country size by including the natural logarithm of population, as a large country may be more diversified and hence faces less external risk than a smaller country. Also larger countries might be more likely to set up a stock market or attract the interest of international investors.

As additional variables, we use *de-facto* (Lane and Milesi-Ferretti, 2007) and *de-jure* (Chinn and Ito, 2008) international financial integration. These variables might be associated with easier access to external funding, thus lower net external positions.[4]

[3]Non-Ricardian behaviour means that the government's budget constraint is not internalised by private economic agents.

[4]In addition, we included the share of natural resources in total exports as a high share of natural resources can be associated with accumulated export revenue. On the other hand, it could also attract FDI inflows. However, this variable is neither significant in any of the estimations nor does it affect the coefficients of the other variables. As it decreases the sample size substantially, we dropped it from the estimations.

4.3.3 Bilateral Concepts

International Financial Remoteness

The concept of international financial remoteness was introduced by Rose and Spiegel (2009). They use the natural logarithm of the distance to the closest financial centre (London, New York, and Tokyo) as their prime measure of remoteness.

First, we use as a remoteness measure the minimum distance to the eight largest gross creditor countries (in terms of US dollars), hence the eight countries that exhibit the largest foreign asset positions in Lane and Milesi-Ferretti (2007).[5] As a robustness check we use the distance to the eight largest gross capital exporters using financial flows data from the IMF's International Financial Statistics and find very similar results. Here we use the total of gross capital outflows, that is the sum of portfolio investments, foreign direct investments, and 'other' and reserve asset flows.[6]

Second, we also consider 'time distance' as measured by the minimum difference in time zones to one of the eight largest creditor countries. Daude and Stein (2007) show that time zone difference is a significant negative factor in FDI and goods trade. The rationale for using these two remoteness measures (both as distance and time zone difference) is to find a proxy for aggregate 'access' to foreign funds and to account for informational asymmetries that are positively related to remoteness.

As an additional robustness check, we weight the distances to the eight largest creditor countries by the inverse of the share of the investments actually received from these countries. Using data from the IMF's Coordinated Portfolio Investment Survey (CPIS) on total portfolio investment positions, we construct the share of investments made by the eight largest creditor countries. Thus instead of using an unweighted distance measure, we employ:

$$IFR_i = \min[ln(distance * (\frac{TA_{ji}}{\sum_{k=1}^{n-1} TA_{ki}})^{-1})] \tag{4.2}$$

where TA_{ji} are the portfolio investments 'Top-8' creditor country j invests in host country i, and $\sum_{k=1}^{n-1} TA_{ki}$ are the total portfolio investments held by foreign investors in country i. We weight by the inverse of the share as the distance to a country which invests a large amount in host country i should receive a lower value than the distance to a country that invests only little in the host country. To illustrate, if the distance from country A to both country B and country C amounts to 1,000 km, but 50% of the foreign portfolio liabilities of country A are held by country B and only 10% by country C, the weighted distance to country B amounts to 2,000 km, whereas the distance to country C is 10,000 km. The rationale

[5] These are the United States, United Kingdom, France, Germany, Japan, Netherlands, Switzerland, and Ireland.

[6] In fact, very similar measures are used as robustness checks by Rose and Spiegel.

behind this weighting is to adjust the concept of international financial remoteness for actual investments such that actual remoteness is relatively smaller or larger than indicated by the unweighted distance term.

Given the theoretical considerations of Section 4.2, we expect a positive coefficient on the remoteness variables in specification (4.1) as the ease of net external funding should be decreasing with distance to the largest creditor countries.

In order to illustrate the concept of international financial remoteness we present the fifteen most and least remote countries in Table 4.1: based on the minimum distance to the eight largest gross creditor countries, we find New Zealand to be the most remote country, followed by Mauritius and Japan. The least remote countries are all European-based with Belgium and the Czech Republic being the closest countries to one of the eight largest gross creditor countries. The histogram in Figure 4.1, shows the distribution of this remoteness measure for our sample. About two thirds of the sample exhibit a minimum log distance of eight or higher (which is equivalent to 3,000 km) to one of the eight largest gross creditors. 20 countries even have a remoteness measure of 8.8 or larger in log terms (6,600km).

When we apply the concept of minimum difference in time zones to one of the eight largest creditor countries, we find a large number of countries (55) to exhibit no time zone difference to one of the major creditor countries. The most remote country based on this measure is Japan, followed by Samoa and the United States.

Weighting the first measure by the inverse of the share of the investments actually received (as described above), reveals a slightly altered picture: Canada is the second least remote country (after Belgium), whereas the most remote countries are Madagascar, Bahrain, and Cambodia.

Using the measure of financial remoteness preferred by Rose and Spiegel (2009), namely the minimum distance to one of the three major financial centres, reveals Belgium and the Netherlands as being least remote, while Mauritius, Japan, and South Africa are the most remote countries.

In Table 4.2, we use Spearman's rank correlations in order to investigate the relation between the different measures of financial remoteness. Crucially, we find a very high correlation coefficient of 0.96 between the concepts based on the distance to the largest creditor countries and the distance to the major financial centres. The coefficient between the distance and time difference measures amounts to 0.46, reflecting a less pronounced relation between the two measures. The rank correlation between the unweighted and weighted minimum distance to one of the eight largest creditor countries is 0.70.

Neighbourliness

We know from the bilateral asset trade literature, that there are further bilateral concepts besides distance that are used as proxies for informational asymmetries. We employ a con-

tiguous dummy, a 'nearby' dummy if the distance between the capitals of two countries is less than 1,000 km, and a currency union dummy.[7]

Conceptually, we cannot use straightforward binary dummies like in the bilateral literature, as we carry out the analysis in a unilateral cross-sectional framework. Thus, we start off with a complete bilateral dataset for our country sample and use these concepts in order to construct weighting matrices along the lines of Baicker (2005). Building on Case et al. (1993) she uses weights that apply different concepts of 'neighbourliness' in order to analyse public spending spillovers among US states.

For instance, applying the concepts of contiguity yields a composite neighbour country for each country.[8] Accordingly, we construct weighting matrices based on contiguity, nearby countries, and currency unions in order to measure the effect of *de-facto* and *de-jure* international financial integration and of net external positions of the composite 'neighbour'.[9]

Thus, in our regression specifications, we use for instance the term $W * IFI_i$, where IFI is a vector of the gross level of foreign assets and liabilities (as a ratio to GDP), and W is a weighting matrix for neighbourliness. For example, in the case of contiguity, we weight the IFI-value of the contiguous countries by their levels of GDP. This allows for accounting for the different sizes (and thus importance) of the various contiguous economies.[10]

For the variables described above, we expect a negative sign in the regression analysis as being closer to (or being in a currency union with) a financially very open or net creditor country should facilitate net external funding.

Convergence Clubs

This concept considers the extent of financial and trade linkages of each country with its respective 'core' country, thus the country with which it has the deepest bilateral integration. This idea goes back to the convergence club concept of Abramovitz (1986) and Baumol (1986) and has been applied to current account patterns of Emerging Asia and Emerging Europe by Hermann and Winkler (2009).

In order to achieve convergence with a 'leader' country, spillovers are sought by the periphery (catching-up or converging) countries. These spillovers work best through extensive trade and financial linkages with the core (Baumol, 1986).

Strictly speaking, the concept of convergence clubs applies best to emerging and developing countries, nevertheless we also use the approach for advanced countries as close financial and trade linkages with another country can potentially facilitate capital imports for this

[7]Based on Rose and Spiegel (2004), we use a strict currency union dummy that is equal to 1 if both countries are in a currency union.

[8]Consequently, this composite variable is zero for an economy without any contiguous countries.

[9]In line with the bilateral asset trade literature, we also construct weighting matrices based on common language between countries. However, we do not find significant coefficients for these variables.

[10]We also experiment with different weighting schemes, for example bilateral asset holdings and bilateral trade and find very similar results.

group.

We apply this concept by not choosing a core country *a priori* as done by Hermann and Winkler (that is based on geographic or political considerations), but use three different quantitative concepts. From the Bank for International Settlements (BIS) database, we use the consolidated foreign bank claims on each host country. Thus, the country with the highest level of bank claims is deemed to be the host country's respective core country and we use the actual amount of bank claims (as a ratio to host country GDP) in order to quantify the level of banking integration between the core and the host country.[11]

As an alternative measure, we use the bilateral level of total portfolio investments in each host country as given by the IMF's CPIS in order to determine the 'core' country. Equivalently, we employ the level of the core country's portfolio investments in the host country (as a ratio to host country GDP) as an indicator of financial integration with the core.[12]

In order to obtain a consistent measure for trade integration, we use the level of bilateral exports from each country to the core based on data from the IMF's Direction of Trade Statistics (DOTS).[13]

We expect more integration with the core to signal lower trade costs, less informational asymmetries and better funding opportunities and thus to be negatively correlated with the net external position.

4.4 Empirical Results

4.4.1 International Financial Remoteness

We analyse the cross-country variation in the net external position, with a particular focus on the role of the bilateral concepts described in the last section.

First, we present some findings concerning the control variables in order to place the paper in the existing literature on net external positions: GDP per capita exhibits a positive sign throughout the paper which is in line with Lane and Milesi-Ferretti (2001a, 2001b, and 2002).[14] Interestingly, the coefficient is smaller (by about 50% and less significant) for the less developed sample hinting at an even larger correlation for the most advanced countries (compare columns (1) and (2), Table 4.3).

[11] This method reveals that Germany is the 'core' for many European countries (supplemented by Austria for Eastern European countries), the United Kingdom for many Asian countries, France for a lot of African countries, and Spain as well as the United States for Latin American countries.

[12] Here, the United States is the core country for the majority of Asian, European, and Latin American countries.

[13] For most Asian and Latin American countries, the United States is the largest export market.

[14] Due to recent updates by Lane and Milesi-Ferretti (2007), we are able to include 149 countries in our analysis - compared to, for example, 61 countries for the period 1990 to 1998 in Lane and Milesi-Ferretti (2002).

The demographic variables are jointly significant throughout the paper indicating that the demographic structure of a country exerts an important impact on the net external position as also found by Lane and Milesi-Ferretti (2002). We do not report the individual demographic coefficients as introduced in Appendix A2 since they do not have a meaningful interpretation individually, but only jointly as parts of a cubic polynomial.[15] The main findings for the full sample (column 1) are a positive correlation with the net foreign asset position for the age cohorts ranging from 30 to 59, whereas high youth as well as old-age dependency are associated with a lower net external position. The relation for the less advanced sample (based on the findings in column 4) exhibits a peak for the age group between 25 to 29, whereas a negative impact on the net external position sets in for all age groups above the age of 40.

In line with Lane and Milesi-Ferretti (2002), we find a significant negative coefficient on the level of public debt throughout the paper. This shows that countries with larger public debt also have larger net foreign liabilities. Thus, we find strong evidence for non-Ricardian behaviour, as high levels of public debt do not seem to be offset by private agents. Lane and Milesi-Ferretti (2002) find this result for a subsample of developing countries, whereas we confirm this result both for the full and reduced samples. Interestingly, the coefficient for the less advanced sample is about twice as large as for the full sample which suggests a higher prevalence of non-Ricardian behaviour in emerging and developing countries.[16] In addition, we control for country size and find a significant positive coefficient on the natural logarithm of population (in line with Lane and Milesi-Ferretti (2001a and 2001b)).

Building on these standard determinants of net external positions, we innovate by including our first bilateral measure: international financial remoteness. We introduce the minimum distance to one of the eight largest international creditor nations. The variable is positive and significant (with a coefficient of 0.093, significant at the 10% level for the full sample (1), and a larger coefficient of 0.146, significant at the 5% level for the reduced sample of less advanced countries (2)). To illustrate this result, were the Slovak Republic in the geographic position of Ukraine (which is equivalent to the Slovak Republic being more remote by 651km), the Slovak Republic's net external position would be less negative by eleven percentage points (that is from -64% of GDP to -53% of GDP), *ceteris paribus*. By the same token, the estimation implies that were Mexico located in the geographic location of Uruguay its net external position (as a ratio to GDP) would be less negative by 15 percentage points. As an extreme case, had the Czech Republic (one of the least remote countries, see Table 4.1) Argentina's level of remoteness, it would increase its net foreign asset position by about 50 percentage points (that is moving from a net liability position of 35% to a net asset

[15] Joint significance of the demographic variables is not found in the estimations presented in columns (2) and (8) of Table 4.3. This indicates that the demographic variables are of less importance for less advanced countries once we control for international financial remoteness based on pure distance measures.

[16] This is in line with Bussiere, Fratzscher, and Mueller (2006) who show that departures from Ricardian equivalence are especially present in liquidity constrained countries.

position of 15% (as a ratio to GDP)).

We can infer from this that countries that are more 'financially-remote' tend to have larger net external positions, thus their net foreign liability position is smaller in absolute terms. This relation is stronger for the less advanced, hence natural debtor nations for whom net external funding is more essential. Thus, proximity to major creditor countries facilitates the running of external deficits for emerging and developing economies.

In columns (3) and (4), we modify our remoteness measure by considering the minimum time difference to one of the eight largest gross creditor nations. Here, we find very similar evidence for more remoteness correlating positively with a higher net external position. The coefficient is almost equal in terms of size and significance (at the 5% level) for both the full and less advanced samples. To exemplify the finding of column (3): were Poland (with no time zone difference to one of the eight largest creditor countries) in the location of Russia (with Moscow having a time zone difference of two hours to the closest of the large creditor countries) Poland's net external position would shift from -50% to -36% (as ratios to GDP), *ceteris paribus*.

In columns (5) and (6), we use the weighted remoteness measure presented in equation (4.2): in line with the previous results the variable has a positive and significant coefficient (at the 1% level for the less advanced sample). Thus our weighting procedure of distance by actual portfolio holdings, substantiates the previous findings.

Finally, we use the measure of international financial remoteness preferred by Rose and Spiegel (2009): the minimum distance to one of the three world financial centres - London, New York, and Tokyo (columns (7) and (8)). This, for the purpose of our analysis, rather coarse measure, fails to be significant for the full sample, but is significant at the 1% level for the less developed sample. This could be indicative of the fact that less advanced countries are particularly relying on financial interactions with these three most established markets.

On the whole, we can conclude that international financial remoteness is robustly significantly associated with larger net external positions. This hints at difficulties to receive net external funding for countries that are more 'remote' from world financial activity. We can attribute these net funding problems to the positive correlation between distance and informational asymmetries as well as limited access to international finance. This finding is fortified by the fact that results are stronger for the narrow sample of less advanced countries. Moreover, we give a further potential explanation for external imbalances: next to the well-established fundamental variables determining a country's net external positions, there is a role for the geographic location of a country. We will further explore the geographic dimension in the next subsection.

4.4.2 Neighbourliness

As outlined in Section 4.3.3, we focus on three concepts of neigbourliness: contiguity, nearby countries, and currency unions.

In Table 4.4, we examine if *de-facto* international financial integration, *de-jure* financial openness, and the net foreign asset position of the respective contiguous countries (weighted by GDP of the contiguous countries) are statistically significant determinants of the net foreign asset position. We find that none of these variables are statistically significant.[17]

In Table 4.5, we employ a less restrictive concept: we do not focus on contiguous countries, but on all countries where the distance between their capitals is less than 1,000 km. Strikingly, columns (1) and (2) show that financial openness (both *de-facto* and *de-jure*) of countries nearby are consistent with a lower net external position. This indicates that being located near financially open countries facilitates net external borrowing. Crucially, this effect is only visible in the full sample, but not for the less advanced countries (columns (4) and (5)). This effect could be driven by European countries that are located very close to each other and also exhibit a high degree of financial integration with each other.

In a similar vein, we examine the role of being part of a currency union for the net external position (Table 4.6). Overall, we observe that both *de-facto* financial openness as well as larger net external positions of the other currency union members are associated with lower net external positions. Again, this is only observed for the full sample. In particular, the result regarding net foreign assets of the other currency union members is crucial. It implies that being in a currency union with net surplus countries, facilitates net borrowing. Anecdotally, the Euro area fits into this picture, as Germany as a persistent net surplus country invests substantially in net debtor countries such as Greece and Spain.

To conclude, we find an important role for the different concepts of neigbourliness in net external funding, which is foremost driven by the most advanced countries.

4.4.3 Convergence Clubs

Following Section 4.3.3, we use three different measures to evaluate the respective core country for each economy and the degree of integration with the core. Starting with the level of banking sector claims of the core country (Table 4.7, column 1), we find that a higher level of bank claims is associated with a more negative net external position (significant at the 5% level). This indicates that deeper integration (in terms of the banking sector) with a core economy facilitates net borrowing.

In column (2), we use portfolio investments of the core country. Again, we find a significant negative coefficient (at the 10% level).[18] We do not find evidence for a significant role of more

[17] However, the signs on the IFI and Chinn-Ito variables are negative.

[18] Note that the number of observations decreases from 149 to 135, as data coverage of the CPIS database is lower than in the BIS database.

trade linkages (column 3). However, when we control for all three measures at the same time (column 4), the bank claim measure and the trade measure both suggest that financial and trade linkages significantly facilitate net borrowing. Thus, the closer the integration with a core country, the better the access to net external funding.

For the narrow sample of less advanced countries, both the portfolio investment measure and the level of exports to the core country are significantly negative, whereas the banking sector measure just fails to be significant at the 10% level. Nevertheless, when we include all three concepts at the same time (column 8), we obtain the same qualitative results as for the full sample: banking sector integration and trade linkages with the core country make net borrowing easier.

We can conclude, both for the full and less advanced sample, that close financial and trade integration with a 'core' country pays off in terms of improved net borrowing opportunities.

4.4.4 Overall specification

In this subsection, we bring together the different pieces of our analysis so far. In Table 4.8, column (1) we employ the baseline estimation (without any bilateral concepts). In column (2), we introduce three bilateral concepts: international financial remoteness (measured by the time-zone difference to the top-8 creditor countries), *de-facto* financial openness of countries nearby, and the level of banking sector claims of the core country. All of these concepts exhibit the same sign as in the previous subsections and are highly significant. Thus, more remote countries receive less net external funding, whereas being located close to financially open countries and being integrated with the respective core country facilitates net external borrowing. Also the adjusted R^2 increases substantially from column (1) to column (2) which indicates the improved goodness of fit of our new specification.

By the same token, we analyse the less advanced sample. The previously obtained results persist (thus, financial openness of the countries nearby is not significant, whereas financial remoteness is positive and significant and integration with the core has a significant negative sign).

For both samples, we include *de-facto* and *de-jure* international financial openness in order to cross-check if these have an impact on the net external position or the bilateral concepts. However, only *de-facto* openness is significant (with a positive coefficient in column (3) for the full sample). Thus our results are robust to the inclusion of these variables.

4.4.5 Decomposition of the net external position

In Table 4.9, we decompose the results obtained in Table 4.8 along two dimensions. First, we divide the net external position into an equity part (portfolio equity and FDI) and a debt part (portfolio and other debt). For the full sample, we find the financial remoteness indicator to be highly significant for the equity part, but not for the debt component. This

could be the result of portfolio equity and FDI being more information-sensitive. In the less advanced sample we find a positive significant coefficient on financial remoteness also for the net debt position.

For the full sample, *de-facto* financial openness of countries nearby exhibits a positive sign for the equity component, whereas we find a negative sign for the debt component (as in the overall estimations). Banking sector integration with the core only has an impact on the net debt position (both for the full and reduced samples).[19]

Second, we distinguish between foreign assets and foreign liabilities: international financial remoteness is significant (at the 1% level) with a negative sign for the total foreign liability position, but has no impact on the foreign asset positions. Consequently, we find additional support for the hypothesis raised in Section 2 that financially-remote countries have difficulties raising (net) external funding, but are able to accumulate assets overseas. This holds for both the full and less advanced samples. The other bilateral variables are not significant for either foreign assets nor liabilities. Thus, their impact works solely through the net position, but not through one of the gross sides.

4.5 Conclusion

This paper integrates two major research areas - the analysis of external imbalances and studies of the geographical determinants of cross-border investment. We investigate the role of a country's geographic location for its ability to raise net external funding.

We find that geography matters: controlling for standard determinants of net external positions, financially-remote countries exhibit robustly more positive net external positions. This hints at difficulties to receive net external funding for countries that are more 'remote' from the major creditor countries. This finding is even stronger for a narrow sample of less advanced countries.

We also find that being located nearby (and being in a currency union with) financially very open countries, facilitates net external borrowing. In addition, close financial and trade integration with a 'core' country pays off in terms of improved net borrowing opportunities.

Consequently, evidence is found for an important role of geographic and bilateral factors for a country's net external wealth. The determinants of bilateral holdings also affect aggregate gross and net positions: a financially-remote country receives substantially less net external funding.

In line with our theoretical considerations, we find an asymmetry in the way the foreign asset and foreign liability positions are affected by financial remoteness. Financially-remote countries are able to overcome remoteness with regard to investing overseas, whereas inward investments are negatively influenced by a remote geographic location. We attribute this net

[19]Strikingly, the demographic structure is only significant for the net debt position.

funding problem to the positive correlation between distance and informational asymmetries as well as limited access to international finance.

For future research, it would be desirable to develop a theoretical model on net external positions and geographic factors that takes the empirical results found in this paper into consideration.

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Appendix

A1 Country Sample and Data Sources

Country sample

Albania	Djibouti	Lao People's Dem. Rep	Rwanda
Algeria	Dominican Republic	Latvia	Samoa
Angola	Ecuador	Lebanon	Saudi Arabia
Argentina	Egypt	Lithuania	Senegal
Armenia	El Salvador	Macedonia	Sierra Leone
Australia	Equatorial Guinea	Madagascar	Singapore
Austria	Eritrea	Malawi	Slovak Republic
Azerbaijan	Estonia	Malaysia	Slovenia
Bahrain	Ethiopia	Maldives	South Africa
Bangladesh	Fiji	Mali	Spain
Belarus	Finland	Malta	Sri Lanka
Belgium	France	Mauritania	Sudan
Belize	Gabon	Mauritius	Swaziland
Benin	Gambia, The	Mexico	Sweden
Bhutan	Georgia	Moldova	Switzerland
Bolivia	Germany	Mongolia	Syrian Arab Republic
Bosnia and Herzegovina	Ghana	Morocco	Tajikistan
Botswana	Greece	Mozambique	Tanzania
Brazil	Grenada	Namibia	Thailand
Bulgaria	Guatemala	Nepal	Togo
Burkina Faso	Guinea	Netherlands	Tonga
Burundi	Haiti	New Zealand	Trinidad and Tobago
Cambodia	Honduras	Nicaragua	Tunisia
Cameroon	Hungary	Niger	Turkey
Canada	Iceland	Nigeria	Uganda
Cape Verde	India	Norway	Ukraine
Chad	Indonesia	Oman	United Arab Emirates
Chile	Iran, Islamic Republic of	Pakistan	United Kingdom
China, P. R.: Mainland	Ireland	Panama	United States
Colombia	Israel	Papua New Guinea	Uruguay
Congo, Dem. Rep. of	Italy	Paraguay	Uzbekistan
Congo, Republic of	Jamaica	Peru	Venezuela, Rep. Bol.
Costa Rica	Japan	Philippines	Vietnam
Croatia	Jordan	Poland	Yemen, Republic of
Cyprus	Kazakhstan	Portugal	Zambia
Czech Republic	Kenya	Qatar	
Cote d'Ivoire	Korea	Romania	
Denmark	Kyrgyz Republic	Russia	

Most advanced countries (in terms of GDP per capita)

Australia	Finland	Japan	Spain
Austria	France	Korea	Sweden
Bahrain	Germany	Netherlands	Switzerland
Belgium	Greece	New Zealand	United Arab Emirates
Canada	Iceland	Norway	United Kingdom
Cyprus	Ireland	Qatar	United States
Denmark	Israel	Singapore	
Equatorial Guinea	Italy	Slovenia	

Data sources

Variables	Source
(Net) External position	Lane and Milesi-Ferretti (2007)
GDP per capita	World Bank - WDI
Demographic variables	United Nations (2007): World Population Prospects: The 2006 Revision
Public debt	Panizza (2008) and National Sources
Distance and contiguous dummy	CEPII (2006)
Time difference	http://www.timeanddate.com/
Currency union dummy	Rose and Spiegel (2004)
Capital account openness	Chinn-Ito (2008)
Bilateral bank claims	BIS (2009)
Bilateral portfolio holdings	IMF - CPIS (2009)
Bilateral exports	IMF - DOTS (2009)

A2 Demographic Specification

Our demographic specification follows Fair and Dominguez (1991) and Higgins (1998), and was introduced as a determinant of net external positions by Lane and Milesi-Ferretti (2002). We divide the population into $J = 12$ age cohorts and the age variables enter the net foreign assets equation as $\sum_{j=1}^{12} \alpha_j p_{jt}$ where p_{jt} is the population share of cohort j in period t and $\sum_{j=1}^{12} \alpha_j = 0$. We make the restrictions that the coefficients lie along a cubic polynomial

$$\alpha_j = \gamma_0 + \gamma_1 j + \gamma_2 j^2 + \gamma_3 j^3$$

The zero-sum restriction on the coefficients implies that

$$\gamma_0 = -\gamma_1 (1/J) \sum_{j=1}^{12} j - \gamma_2 (1/J) \sum_{j=1}^{12} j^2 - \gamma_3 (1/J) \sum_{j=1}^{12} j^3$$

In turn, we can estimate γ_1, γ_2, γ_3 by introducing the age variables into the specification as

$$\gamma_1 DEM_{1t} + \gamma_2 DEM_{2t} + \gamma_3 DEM_{3t}$$

where

$$DEM_{1t} = \sum_{j=1}^{12} j p_{jt} - (1/J) \sum_{j=1}^{12} j \sum_{j=1}^{12} p_{jt}$$

$$DEM_{2t} = \sum_{j=1}^{12} j^2 p_{jt} - (1/J) \sum_{j=1}^{12} j^2 \sum_{j=1}^{12} p_{jt}$$

$$DEM_{3t} = \sum_{j=1}^{12} j^3 p_{jt} - (1/J) \sum_{j=1}^{12} j^3 \sum_{j=1}^{12} p_{jt}$$

Figure 4.1: International financial remoteness: histogram

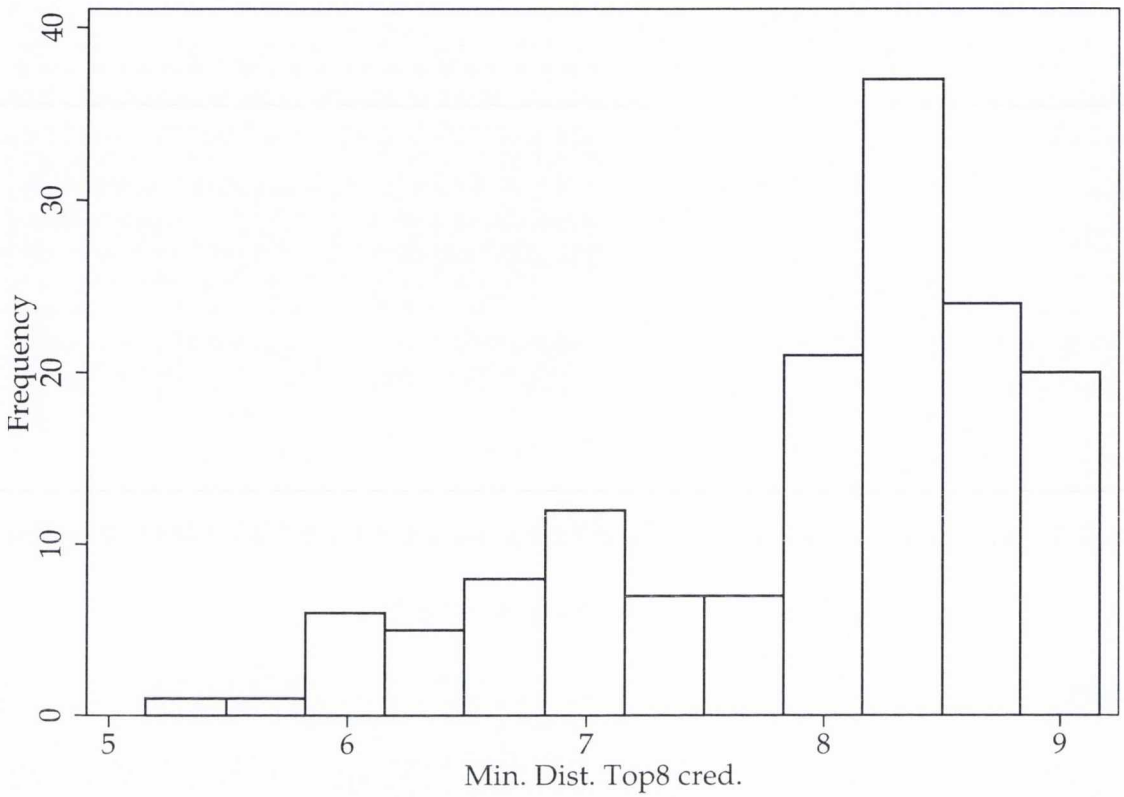

Table 4.1: International financial remoteness: different measures

Min. Dist. Top-8 cred.		**Min. Time Dif. Top-8 cred.**		**Min. Dist. Top-8 cred. (weighted)**		**Min. Dist. Fin. Centre**	
Least remote	Most remote	Least remote	Most remote	Least remote	Most remote	Least remote	Most remote
Belgium	New Zealand	*55 countries*	Japan	Belgium	Madagascar	Belgium	Mauritius
Czech Republic	Mauritius		Samoa	Canada	Bahrain	Netherlands	Japan
France	Japan		United States	Belarus	Cambodia	Ireland	South Africa
United Kingdom	Mozambique		Maldives	Czech Republic	Fiji	Germany	New Zealand
Denmark	Swaziland		Pakistan	Slovak Republic	Angola	France	Swaziland
Netherlands	Uruguay		Tonga	Latvia	Qatar	Switzerland	Madagascar
Switzerland	Argentina		Nepal	Austria	Namibia	Denmark	Botswana
Ireland	South Africa		Sri Lanka	Lithuania	Malaysia	Austria	Mozambique
Poland	Madagascar		India	Slovenia	Uganda	Czech Republic	Uruguay
Austria	Botswana		Bhutan	Ireland	Botswana	Korea	Argentina
Slovenia	Chile			Netherlands	Indonesia	Slovenia	Namibia
Slovak Republic	Australia			Hungary	Australia	Norway	Zambia
Germany	Tonga			Armenia	Swaziland	Spain	Malawi
Croatia	Namibia			Poland	Mauritius	Croatia	Chile
Hungary	Maldives			Denmark	China	Italy	Tonga

Table 4.2: International financial remoteness: Spearman's rank correlations

	Min. Dist. Top-8 cred.	**Min. Time Dif. Top-8 cred.**	**Min. Dist. Top-8 cred. (weighted)**	**Min. Dist. Fin. centre**
Min. Dist. Top-8 cred.	1.00			
Min. Time Dif. Top-8 cred.	0.46	1.00		
Min. Dist. Top-8 cred. (weighted)	0.70	0.48	1.00	
Min. Dist. Fin. centre	0.96	0.50	0.68	1.00

Table 4.3: International financial remoteness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	0.241	0.105	0.257	0.144	0.242	0.140	0.241	0.103
	[0.052]***	[0.056]*	[0.053]***	[0.057]**	[0.054]***	[0.060]**	[0.052]***	[0.055]*
Population	0.058	0.055	0.059	0.061	0.062	0.055	0.058	0.054
	[0.023]**	[0.021]***	[0.023]**	[0.022]***	[0.024]**	[0.021]***	[0.023]**	[0.020]***
Debt to GDP	-0.336	-0.643	-0.329	-0.599	-0.381	-0.706	-0.334	-0.626
	[0.139]**	[0.101]***	[0.128]**	[0.106]***	[0.147]**	[0.107]***	[0.140]**	[0.098]***
Min. Dist. Top-8 cred.	0.093	0.146						
	[0.050]*	[0.068]**						
Min. Time Dif. Top-8 cred.			0.068	0.057				
			[0.032]**	[0.025]**				
Min. Dist. Top-8 cred. (CPIS weights)					0.083	0.109		
					[0.047]*	[0.037]***		
Min. Dist. Fin. centre							0.053	0.260
							[0.099]	[0.080]***
Observations	149	119	149	119	136	106	149	119
Adjusted R-squared	0.35	0.44	0.38	0.44	0.38	0.50	0.36	0.46
Wald test (Demography)	3.28	1.50	7.91	7.33	3.89	3.71	4.11	1.67
P-value	0.02	0.22	0.00	0.00	0.01	0.01	0.01	0.18

Notes: The dependent variable is the net foreign asset position (as a ratio to GDP); the explanatory variables are GDP per capita (in natural log form), population (in natural log form), three demographic variables as defined in Appendix A2 (not reported), the ratio of public debt to GDP, the minimum distance to one of the eight largest creditor countries (in natural log form) ((1) and (2)), the minimum time difference to one of the eight largest creditor countries ((3) and (4)), the minimum distance to one of the eight largest creditor countries weighted by portfolio holdings ((5) and (6)), and the minimum distance to one of the three major financial centres (London, New York, and Tokyo) ((7) and (8)). Cross-sectional estimation with heteroskedasticity robust standard errors (in parentheses). Full sample estimations are reported in (1), (3), (5), and (7); estimations for the sample of non-advanced countries are shown in (2), (4), (6), and (8). Wald χ^2 statistic and associated p-value for joint significance of the demographic variables. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4.4: Neighbourliness: contiguity

	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	0.243	0.255	0.232	0.113	0.133	0.117
	[0.054]***	[0.059]***	[0.052]***	[0.057]*	[0.059]**	[0.056]**
Population	0.059	0.060	0.056	0.053	0.054	0.054
	[0.024]**	[0.023]***	[0.023]**	[0.021]**	[0.020]***	[0.022]**
Debt to GDP	-0.332	-0.339	-0.326	-0.635	-0.649	-0.654
	[0.145]**	[0.142]**	[0.146]**	[0.109]***	[0.106]***	[0.106]***
IFI of neighbours	-0.002			-0.055		
	[0.011]			[0.080]		
Chinn-Ito of neighbours		-0.058			-0.089	
		[0.061]			[0.062]	
NFA of neighbours			0.164			-0.153
			[0.227]			[0.211]
Observations	149	149	149	119	119	119
Adjusted R-squared	0.35	0.36	0.36	0.42	0.43	0.42
Wald test (Demography)	7.24	7.08	6.83	6.36	6.92	7.24
P-value	0.00	0.00	0.00	0.00	0.00	0.00

Notes: The dependent variable is the net foreign asset position (as a ratio to GDP); the explanatory variables are GDP per capita (in natural log form), population (in natural log form), three demographic variables as defined in Appendix A2 (not reported), the ratio of public debt to GDP, the sum of gross financial assets and liabilities (as a ratio to GDP) of the composite neighbour country ((1) and (4)), the Chinn-Ito Index of financial openness of the composite neighbour country ((2) and (5)), and the net foreign asset position (as a ratio to GDP) of the composite neighbour country ((3) and (6)). Cross-sectional estimation with heteroskedasticity robust standard errors (in parentheses). Full sample estimations are reported in (1)-(3); estimations for the sample of non-advanced countries are shown in (4)-(6). Wald χ^2 statistic and associated p-value for joint significance of the demographic variables. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4.5: Neighbourliness: nearby countries

	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	0.249	0.266	0.241	0.110	0.107	0.111
	[0.053]***	[0.054]***	[0.053]***	[0.056]*	[0.058]*	[0.056]*
Population	0.053	0.072	0.057	0.052	0.050	0.055
	[0.022]**	[0.023]***	[0.025]**	[0.021]**	[0.022]**	[0.022]**
Debt to GDP	-0.341	-0.318	-0.332	-0.644	-0.651	-0.643
	[0.147]**	[0.143]**	[0.145]**	[0.107]***	[0.108]***	[0.106]***
IFI of nearby countries	-0.056			-0.022		
	[0.009]***			[0.067]		
Chinn-Ito of nearby countries		-0.183			0.026	
		[0.073]**			[0.060]	
NFA of nearby countries			0.082			-0.126
			[0.264]			[0.251]
Observations	149	149	149	119	119	119
Adjusted R-squared	0.38	0.38	0.35	0.42	0.42	0.42
Wald test (Demography)	7.65	8.18	7.46	6.81	7.00	6.88
P-value	0.00	0.00	0.00	0.00	0.00	0.00

Notes: The dependent variable is the net foreign asset position (as a ratio to GDP); the explanatory variables are GDP per capita (in natural log form), population (in natural log form), three demographic variables as defined in Appendix A2 (not reported), the ratio of public debt to GDP, the sum of gross financial assets and liabilities (as a ratio to GDP) of the composite nearby country ((1) and (4)), the Chinn-Ito Index of financial openness of the composite nearby country ((2) and (5)), and the net foreign asset position (as a ratio to GDP) of the composite nearby country ((3) and (6)). Cross-sectional estimation with heteroskedasticity robust standard errors (in parentheses). Full sample estimations are reported in (1)-(3); estimations for the sample of non-advanced countries are shown in (4)-(6). Wald χ^2 statistic and associated p-value for joint significance of the demographic variables. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4.6: Neighbourliness: currency union members

	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	0.261	0.253	0.246	0.124	0.124	0.121
	[0.055]***	[0.056]***	[0.052]***	[0.059]**	[0.059]**	[0.059]**
Population	0.057	0.054	0.061	0.048	0.044	0.048
	[0.024]**	[0.024]**	[0.023]**	[0.021]**	[0.021]**	[0.021]**
Debt to GDP	-0.341	-0.332	-0.346	-0.649	-0.650	-0.645
	[0.144]**	[0.145]**	[0.143]**	[0.105]***	[0.106]***	[0.107]***
IFI of CU members	-0.103			-0.115		
	[0.046]**			[0.077]		
Chinn-Ito of CU members		-0.072			-0.094	
		[0.079]			[0.065]	
NFA of CU members			-0.240			1.287
			[0.041]***			[1.014]
Observations	149	149	149	119	119	119
Adjusted R-squared	0.37	0.36	0.36	0.43	0.43	0.43
Wald test (Demography)	8.00	7.20	7.23	7.75	7.66	7.45
P-value	0.00	0.00	0.00	0.00	0.00	0.00

Notes: The dependent variable is the net foreign asset position (as a ratio to GDP); the explanatory variables are GDP per capita (in natural log form), population (in natural log form), three demographic variables as defined in Appendix A2 (not reported), the ratio of public debt to GDP, the sum of gross financial assets and liabilities (as a ratio to GDP) of the composite currency union member country ((1) and (4)), the Chinn-Ito Index of financial openness of the composite currency union member country ((2) and (5)), and the net foreign asset position (as a ratio to GDP) of the composite currency union member country ((3) and (6)). Cross-sectional estimation with heteroskedasticity robust standard errors (in parentheses). Full sample estimations are reported in (1)-(3); estimations for the sample of non-advanced countries are shown in (4)-(6). Wald χ^2 statistic and associated p-value for joint significance of the demographic variables. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4.7: Integration with core

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	0.250	0.291	0.254	0.303	0.125	0.141	0.136	0.177
	[0.054]***	[0.055]***	[0.053]***	[0.055]***	[0.058]**	[0.056]**	[0.058]**	[0.058]***
Population	0.037	0.059	0.055	0.020	0.041	0.057	0.046	0.032
	[0.025]	[0.027]**	[0.024]**	[0.033]	[0.023]*	[0.025]**	[0.021]**	[0.027]
Debt to GDP	-0.349	-0.341	-0.356	-0.407	-0.647	-0.675	-0.682	-0.720
	[0.144]**	[0.162]**	[0.149]**	[0.168]**	[0.107]***	[0.113]***	[0.105]***	[0.115]***
Bank Claims of core	-0.467			-0.775	-0.275			-0.484
	[0.190]**			[0.240]***	[0.168]			[0.192]**
CPIS assets of core		-0.330		0.008		-0.349		-0.116
		[0.192]*		[0.218]		[0.103]***		[0.130]
Exports to core			-0.631	-0.798			-0.814	-0.899
			[0.401]	[0.439]*			[0.348]**	[0.354]**
Observations	149	135	149	135	119	106	119	106
Adjusted R-squared	0.38	0.36	0.36	0.40	0.43	0.44	0.44	0.48
Wald test (Demography)	6.64	9.35	8.09	9.04	6.96	8.15	8.70	9.22
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: The dependent variable is the net foreign asset position (as a ratio to GDP); the explanatory variables are GDP per capita (in natural log form), population (in natural log form), three demographic variables as defined in Appendix A2 (not reported), the ratio of public debt to GDP, bank claims of the core country (as a ratio to host country GDP) ((1), (4), (5), and (8)), portfolio assets of the core country (as a ratio to host country GDP) ((2), (4), (6), and (8)), and exports to the core country (as a ratio to GDP) ((3), (4), (7), and (8)). Cross-sectional estimation with heteroskedasticity robust standard errors (in parentheses). Full sample estimations are reported in (1)-(4); estimations for the sample of non-advanced countries are shown in (5)-(8). Wald χ^2 statistic and associated p-value for joint significance of the demographic variables. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4.8: Overall specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP-PC	0.242	0.275	0.231	0.267	0.111	0.161	0.156	0.174
	[0.052]***	[0.056]***	[0.056]***	[0.061]***	[0.056]*	[0.059]***	[0.061]**	[0.062]***
Population	0.058	0.030	0.040	0.030	0.052	0.050	0.052	0.047
	[0.023]**	[0.024]	[0.024]*	[0.024]	[0.021]**	[0.023]**	[0.022]**	[0.024]*
Debt to GDP	-0.332	-0.357	-0.423	-0.373	-0.645	-0.596	-0.614	-0.604
	[0.144]**	[0.128]***	[0.127]***	[0.130]***	[0.105]***	[0.109]***	[0.143]***	[0.112]***
Int. Fin. Rem.		0.074	0.087	0.074		0.062	0.064	0.061
		[0.031]**	[0.031]***	[0.031]**		[0.025]**	[0.026]**	[0.026]**
IFI close count.		-0.056	-0.057	-0.056		-0.035	-0.036	-0.028
		[0.011]***	[0.010]***	[0.011]***		[0.058]	[0.059]	[0.060]
Bank Cl. core		-0.508	-0.572	-0.514		-0.304	-0.307	-0.311
		[0.183]***	[0.169]***	[0.185]***		[0.136]**	[0.143]**	[0.137]**
IFI			0.051				0.016	
			[0.024]**				[0.094]	
Chinn-Ito				0.019				-0.013
				[0.029]				[0.027]
Obs.	149	149	149	148	119	119	119	118
Adj. R-squared	0.36	0.43	0.46	0.42	0.42	0.44	0.44	0.44
Wald (Dem.)	7.44	7.47	7.09	7.78	7.06	7.55	7.35	7.25
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: The dependent variable is the net foreign asset position (as a ratio to GDP); the explanatory variables are GDP per capita (in natural log form), population (in natural log form), three demographic variables as defined in Appendix A2 (not reported), the ratio of public debt to GDP, the minimum time difference to one of the eight largest creditor countries, the sum of gross financial assets and liabilities (as a ratio to GDP) of the composite nearby country, bank claims of the core country (as a ratio to host country GDP), the sum of gross financial assets and liabilities (as a ratio to GDP) ((3) and (7)), and the Chinn-Ito Index of financial openness ((4) and (8)). Cross-sectional estimation with heteroskedasticity robust standard errors (in parentheses). Full sample estimations are reported in (1)-(4); estimations for the sample of non-advanced countries are shown in (5)-(8). Wald χ^2 statistic and associated p-value for joint significance of the demographic variables. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4.9: Decomposition of the net external position

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	NFA Eq	**NFA Debt**	**TA**	**TL**	**NFA Eq**	**NFA Debt**	**TA**	**TL**
GDP-PC	0.048	0.225	0.572	0.295	-0.021	0.194	0.252	0.054
	[0.040]	[0.041]***	[0.134]***	[0.119]**	[0.034]	[0.046]***	[0.070]***	[0.065]
Population	0.036	-0.002	-0.087	-0.107	0.038	0.011	-0.042	-0.085
	[0.015]**	[0.019]	[0.058]	[0.051]**	[0.014]***	[0.017]	[0.039]	[0.031]***
Debt to GDP	-0.079	-0.353	0.440	0.849	-0.174	-0.477	0.231	0.861
	[0.070]	[0.094]***	[0.167]***	[0.124]***	[0.068]**	[0.089]***	[0.104]**	[0.119]***
Int. Fin. Rem.	0.041	0.036	-0.088	-0.168	0.047	0.026	-0.015	-0.090
	[0.016]***	[0.027]	[0.059]	[0.057]***	[0.013]***	[0.015]*	[0.025]	[0.030]***
IFI close count.	0.046	-0.085	-0.017	0.030	0.035	-0.020	0.019	0.017
	[0.007]***	[0.007]***	[0.028]	[0.023]	[0.045]	[0.042]	[0.048]	[0.070]
Bank Cl. core	-0.129	-0.314	0.379	0.865	-0.013	-0.250	-0.043	0.262
	[0.150]	[0.165]*	[0.656]	[0.601]	[0.118]	[0.091]***	[0.189]	[0.227]
Obs.	149	149	149	149	119	119	119	119
Adj. R-squared	0.11	0.52	0.31	0.26	0.14	0.59	0.19	0.50
Wald (Dem.)	0.21	6.30	2.71	3.62	0.74	6.62	0.75	3.00
P-value	0.89	0.00	0.05	0.02	0.53	0.00	0.52	0.03

Notes: The dependent variables are the net foreign equity position (as a ratio to GDP) ((1) and (5)), the net foreign debt position (as a ratio to GDP) ((2) and (6)), the gross foreign asset position ((3) and (7)), and the gross foreign liability position ((4) and (8)), respectively; the explanatory variables are GDP per capita (in natural log form), population (in natural log form), three demographic variables as defined in Appendix A2 (not reported), the ratio of public debt to GDP, the minimum time difference to one of the eight largest creditor countries, the sum of gross financial assets and liabilities (as a ratio to GDP) of the composite nearby country, and the bank claims of the core country (as a ratio to host country GDP). Cross-sectional estimation with heteroskedasticity robust standard errors (in parentheses). Full sample estimations are reported in (1)-(4); estimations for the sample of non-advanced countries are shown in (5)-(8). Wald χ^2 statistic and associated p-value for joint significance of the demographic variables. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Chapter 5

Conclusion

This thesis considers crucial dimensions of financial globalisation: international risk sharing by means of cross-border ownership of financial markets, the relation between financial reforms and international capital flows, as well as the relevance of geographic factors for a country's net external position.

In the first essay, analysis of 21 industrial countries shows evidence for pro-cyclicality of capital gains on domestic stock markets over a medium term horizon. Thus, with cross-border ownership of portfolio equity investments, potential for hedging against domestic output fluctuations by means of the capital gains channel of foreign liabilities is found. The individual country analysis reveals substantial heterogeneity of these cyclicality patterns. The analysis suggests that this cross-country variation can be explained by the level of economic development and the size of financial markets.

The second essay comprises an analysis of 18 emerging European economies. We find domestic financial reforms to be positively associated with net capital inflows. Controlling for standard determinants of capital flows, we find banking sector reforms in particular to be consistent with higher net financial inflows, whereas no such correlation is found for security market reforms or for indicators of financial depth. Additional net inflows are reaped by the EU accession countries. Countries with more reformed banking sectors receive significantly higher FDI and 'other' investment net inflows; this is also found for gross financial inflows, but not for outflows.

In the final essay, we show that, controlling for standard determinants of net external positions, financially-remote countries exhibit more positive net external positions. This finding is found to be stronger for less advanced countries, hinting at external funding problems for more remote countries. Being located near financially very open countries, being in currency unions with creditor countries, or being highly integrated through financial and trade linkages with a 'core' country facilitates net external borrowing. Consequently, evidence is found for an important role of geographic and bilateral factors for a country's net external wealth.

On the whole, this thesis demonstrates the importance of empirical research in order

to analyse different aspects of a very complex phenomenon such as financial globalisation. The results obtained offer new insights to policymakers and contribute to the rich body of academic research on the topic of financial globalisation.