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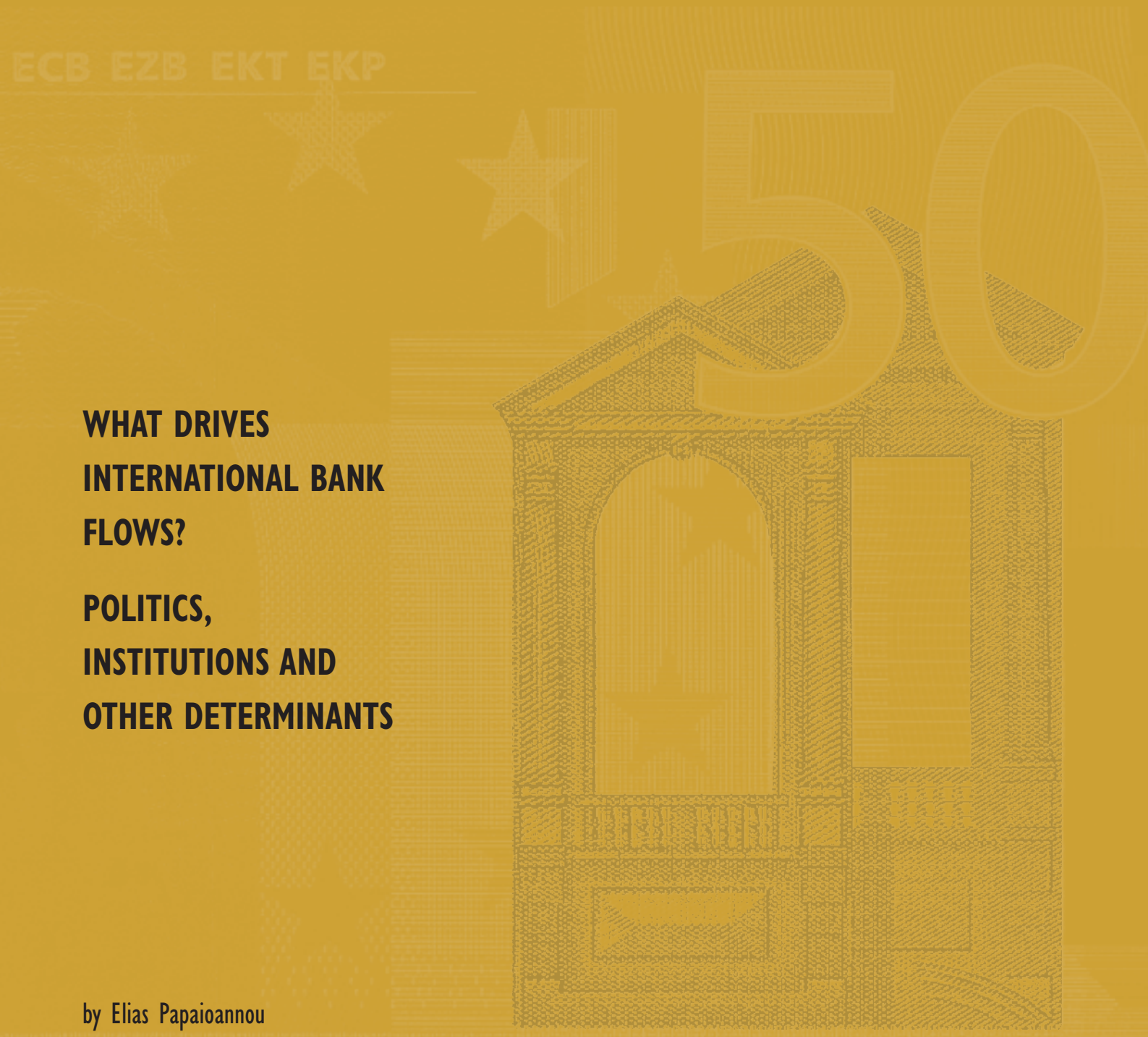


# WHAT DRIVES INTERNATIONAL BANK FLOWS?

## POLITICS, INSTITUTIONS AND OTHER DETERMINANTS

by Elias Papaioannou

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In 2005 all ECB publications will feature a motif taken from the €50 banknote.



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## ABSTRACT

This paper uses a large panel of bilateral bank flow data to assess how institutions and politics affect international capital -bank in particular- flows. The following key findings emerge: 1) The empirical "gravity" model is the benchmark in explaining the volume of international banking activities. 2) Conditioned on standard gravity factors (distance, GDP, population), well-functioning institutions are a key driving force for international bank flows. Specifically, foreign banks invest substantially more in countries with *i*) uncorrupt bureaucracies, *ii*) high-quality legal system, and *iii*) a non-government controlled banking system. 3) Beyond institutions, politics exert also a first-order impact. 4) The European Integration process has spurred cross-border banking activities between member states. These results are robust to various econometric methodologies, samples and the potential endogeneity of institutional characteristics. The strong institutions/politics-bank flows nexus has strong implications for asset trade and international macro theories, which have not modelled these relationships explicitly.



**JEL Classification:** F34, F21, G21, K00

**Keywords:** banks, capital flows, institutions, law and finance, politics

## Non-technical summary

One of the key and most controversial characteristics of the recent wave of globalization has been the spike in cross-border financial flows. Capital flows have been recently regarded both as a remedy and a curse for emerging countries economic setbacks. The association of capital flow volatility with recent episodes of financial turmoil have challenged the theoretically sound capital flows-development link. Understanding therefore the underlying factors that influence the behavior of foreign investors is vital. In addition it is particularly useful to investigate whether high-quality institutions and political stability play any role in pulling foreign capital. The IMF and the World Bank, for example, have constantly urged their members to implement institutional reforms, tackle corruption, improve their bureaucracy and privatize state-owned enterprises to attract foreign capital.

Using quarterly data on gross bilateral banking transactions from nineteen to fifty-one countries during the last twenty years, the panel estimates show that besides geography and income level, politics and institutions are the key determinants of international banking activities. Specifically, employing various panel methodologies, the analysis reveals the following key results:

1. A "gravity" equation predicting that bank flows between two countries are positively associated to their "size" (proxied by population and GDP) and inversely related to their "distance" (that captures transaction and information costs) is a powerful benchmark in analyzing cross-border banking activities.

2. When the "gravity" model is augmented with a subjective measure of institutional quality and political stability (ICRG "political risk") it can explain more than half of the overall variability in the volume of bilateral bank lending. The role of institutions/political risk in attracting cross-border bank capital is also economically very large. A one percent decrease in political risk in the capital recipient country is on average associated with a two percent spike in the volume of cross-border bank lending.

3. To investigate whether it is politics or institutions the key in explaining foreign bank liquidity, I try to separate the two effects estimating gravity models, where both the

composite political risk measure and specific institutional indicators jointly enter the specification. The results suggest that both sound policies and well-functioning institutions exert a significant role in attracting foreign bank investment. When I investigate exactly which institutional structures influence foreign bank lending, the estimates show that foreign banks are unwilling to allocate capital in countries:

(a) With corrupt and inefficient bureaucracies.

(b) With poor investor protection and slow judicial process.

(c) Where the government owns and controls the domestic banking system.

4. The empirical analysis also reveals some additional interesting patterns:

(a) The elimination of exchange rate risk and the harmonization of banking regulation that has taken place within the European Union has spurred cross-border banking activities between member states by approximately 50%.

(b) The quantitatively large institutional and politics effect applies both to developed and emerging countries.

(c) Asset and liability flows are strong complements, since the same institutional and political factors that influence gross investment flows, affect financing flows.

From a theoretical standpoint, the results thus offer a middle-ground approach to the ongoing debate on whether law (La Porta *et al.*, 1998) or politics (Rajan and Zingales, 2003) is the key in explaining financial patterns around the world. The results also suggest that theoretical work on international capital movements needs to explicitly model the interrelations between institutional quality, political stability and capital flows. The strong institution/politics capital flows nexus, also hints to a likely mechanism through which well-defined and enforced institutions contribute to economic growth.

The policy-implications of the results are also considerable: Policy reforms, like power decentralization, democratizations, and privatization, and structural policies aiming to improve inefficient bureaucracies, tackle corruption, and enhance legal system competence are rewarded by foreign banks, who invest substantially more in investor-friendly countries. Therefore such policies can spur investment and growth opportunities, by enhancing the liquidity of financial intermediaries.

# 1 Introduction

Cross-border capital flows have skyrocketed in the last decades. Such capital movements have been regarded by policy-makers and academics as both an anathema and a panacea to both emerging and developed countries structural problems (Obstfeld, 1998). There is, however, little empirical work on what drives international liquidity. Even less work exists on the role of institutions and politics in explaining cross-border capital movements. This is most likely due to the absence of well-developed theory and data problems regarding both capital flow and institutions. The present study uses newly compiled institutional quality indicators, merges them with one of the oldest and more complete datasets of bilateral capital flows (BIS Locational Banking Statistics) and provides an empirical investigation of how various types of institutional arrangements impact cross-border bank flows.

This paper's contribution is twofold: First, it adds to the fast-growing literature on the determinants of international capital movementss (e.g. Wei, 2000; Mody, Razin, and Sadka, 2003; Portes and Rey, *forthcoming*), by studying the driving forces of international banking activities. Second, and most importantly, it provides the first comprehensive empirical study of how the overall institutional and political environment influences the volume of international capital transactions.

Using quarterly observations on gross bilateral banking transactions from nineteen ("*source*") to fifty-one ("*recipient*") countries from the mid-eighties until 2002 and employing various panel methodologies, the estimates show that geography, politics and institutions are key determinants of international banking activities. The "gravity" equation that is highly successful in empirical trade studies, which models asset flows as function of the distance between the two countries and their "size", appears to be a powerful benchmark for analyzing cross-border bank flows as well. The power of the "gravity" specification sharply increases, however, when augmented with a measure of the overall quality of the institutional and political environment (ICRG political risk rating). Not only is the political risk measure highly significant, but the empirical model can explain more than half of gross bilateral bank flows variability, even at the noisy quarterly frequency. The economic magnitude of the results is strong. Controlling for unobserved country characteristics and exploiting the "*within*" country variation, the estimates suggest that a five percent political risk decline in the capital recipient country is associated with an almost two percent rise in bilateral bank lending volume. Other panel methodologies produce even larger effects.

Since it is not crystal-clear which type of institutional or political features this composite institutional indicator exactly captures, I try to "*unbundle*" institutions by quantifying the effect of specific institutional characteristics on international banking activities. The analysis reveals interesting new regularities: *i*) A corrupt bureaucracy acts like a tax and discourages foreign banking investment. *ii*) Banks appear unwilling to invest in countries with inefficient legal systems, most likely because agency costs are amplified. Quantitatively, a 10 percent improvement in the time to complete a simple legal case in the recipient country is followed by an approximate 3 percent rise in the volume of bilateral bank flows. *iii*) Corporate governance practices are also quite important, and government ownership of the banking sector strongly hampers foreign bank investment. *iv*) European Union (EU) membership has substantially increased cross-border banking activities among member-states, most likely through banking law harmonization and the minimization of exchange risk.

There is, however, an ongoing debate on whether law or politics is the key driving force of financial development (e.g. Rajan and Zingales, 2003). To assess if foreign banks' key consideration when making their capital allocation decisions is political stability or institutional performance, I also estimate specifications including both the political risk and the specific institutional proxies simultaneously. The results suggest that politics and institutions are both key determinants of international capital transactions having thus somewhat independent effects.

This new evidence on a strong link between institutions and politics and international bank flows link is significant in a number of dimensions.

First, the bank flow dataset employed includes not only international inter-bank activities, but also debt, equity and direct investment flows. The results have thus a broader interpretation and call for more research on the role of institutions in other types of capital flows.

Second, understanding the determinants of financial intermediaries' liquidity in a globalized world can enhance our knowledge about the mechanisms of financial and economic development. Recent work has shown that the banking sector's liquidity has a causal effect on economic growth (see Levine, 2004, for a review). Since foreign lending is required especially by capital-scarce countries to finance domestic investment, it is of great importance to understand what drives international bank flows.

Third, capital flows have been at the core of the so-called (original) Washington consensus

debate and "*the recent recognition that market-oriented policies may be inadequate without more serious institutional transformation*" (Rodrik, 2004). In spite of evidence linking capital flows to sizable increases in domestic investment and growth (Bosworth and Collins, 1999; Razin, 2002), their role in generating recent financial crises has cast doubt on the benefits of capital account liberalization. The "crisis leading indicators" studies have revealed a strong connection between the volume of capital (and specifically bank) flows and recent crises.[1] Van Rijckeghem and Weder (2003), for example, demonstrate that contagion spreads primarily through banking centers. Understanding what drives international banking activities can therefore shed light on one of the hottest debates in international economics.

Fourth, analyzing gross international transactions may reveal information about aggregate holdings and net flows. The literature on the "*home bias puzzle*" (see Lewis, 1999, for recent review) has examined numerous potential explanations. These include transportation costs in the goods market (Obstfeld and Rogoff, 2000), along with information and other frictions in asset trading (Martin and Rey, 2004).[2] Although the importance of institutions, especially the law and corruption, has also been considered, not much work has been conducted quantifying the importance of institutional quality and political stability in resolving this question. A related puzzle is why capital does not flow from rich to poor countries (Lucas, 1990). Shleifer and Wolfenzon (2002) model how agency costs stemming from inefficient corporate governance and law enforcement mechanisms impede foreign capital flowing to capital-scarce countries. This paper's results suggest that not only do poor countries receive substantially less net inward investment, as recent studies show (Alfaro *et al.*, 2003), but they participate less in the international capital market. My results thus not only directly validate Shleifer and Wolfenzon, but also reveal additional institutional and political risk characteristics that explain a big part of this low participation.

Fifth, the results have direct policy implications. Political reforms, such as privatization or democratization (which are associated with a substantial decline in "political risk"), can significantly increase the liquidity of domestic financial intermediaries, fostering local investment.

[1] See, for example, Frankel and Rose (1996) and Aghion, Bacchetta and Banerjee (2001) for empirics and theory linking capital flows to the likelihood of financial crises.

[2] In a recent paper Engel and Matsumoto (2004) offer an alternative intuitive explanation to the home bias puzzle. In their new Keynesian DGE model sticky prices generate a negative correlation between labor income and domestic firm's profits and equity returns. Consequently domestic agents hold domestic equities, since they are a good hedge against future income and productivity shocks.

The rest of the paper is structured as follows: In the next section I briefly review previous related work and discuss the channels through which institutions and politics affect international financial flows. Section 3 describes the empirical methodology and the data. Section 4 provides a preliminary analysis of the panel descriptives. Section 5 presents the main regression results: It first examines the effect of institutional quality, broadly defined, in explaining gross international bank flows. Second, it quantifies the impact of specific institutional characteristics (namely legal system quality, corruption, and government ownership of banks), controlling for both political and economic risk. Section 6 gives some additional evidence. Section 7 presents sensitivity checks, addressing concerns arising from omitted variables, endogeneity, measurement error and data quality. Section 8 concludes, offering some directions for future research.

# 2 Related literature & why institutions matter

## 2.1 Previous empirical work

This paper relates and adds new evidence to two distinguishable areas of research: First is the literature on the determinants of cross-border capital movements.[3] Studies by Portes and Rey (*forthcoming*) on equity, Mody, Razin, and Sadka (2003) on FDI, and Buch (2000) on bank flows have demonstrated that the "gravity" model successfully simulates not only goods, but also asset trade. The literature has thus far concentrated on the role of geography and information asymmetries in explaining asset trade. Although information costs could be correlated or magnified with poorly performing institutions, research has to a large extent ignored the role institutional and political characteristics play in international capital movements. A notable exception is Shang-Jin Wei's work. Wei (2000), for example, shows that corruption exerts a distortionary role to FDI. Likewise, Wei and Gelos (2002) show that emerging market funds invest systematically less in less transparent countries. Since the dataset employed contains not only inter-bank loans, but also substantial amounts of FDI and equity flows, the results hint that a key missing input of previous capital flow studies were politics and other institutional characteristics (legal system quality, government control of financial intermediaries, corporate governance).[4]

[3] A third distinct literature has focused on US banks' international extension of credit (e.g. Goldberg and Johnson, 1990; Dahl and Shrieves, 1999). Institutions and politics are absent from those studies.

[4] Portes and Rey (*forthcoming*) did not find a significnat effect of some corporate governance and transparency measures in explaining cross-border equity flows.

Second is the institutions and finance literature. Starting with the seminal work of La Porta *et al.* (1997, 1998, 1999), numerous studies have established a strong causal effect of the quality of legal system on financial development. Well-defined and protected investors' rights appear to be a prerequisite for liquid capital markets (La Porta *et al.* 1997), merger and acquisition activity (Rossi and Volpin, *forthcoming*), and large project finance deals (Esty and Megginson, *forthcoming*). Recently, however, alternative to legal system factors have been considered. Stulz and Williamson (2003), for example, show that cultural characteristics (religion, societal composition, language) perform better than legal quality proxies in explaining financial patterns across the world. Rajan and Zingales (2003) emphasize the role of politics (protectionism, lobbying) in financial development. Not only are my results in accord with these insights, but they also reveal a synthetic approach. The panel regressions imply that both legal system quality and politics are key driving forces of the volume of international bank flows.[5] Culture plays also an important role, since countries with common historical, colonial, or religious ties engage much more in bilateral banking activities.

## 2.2 Why institutions matter for gross cross-border bank transaction flows: Channels and theory

Political risk and institutional quality strongly affect foreign investors (banks in the present study) behavior. But where does this effect come from?

First, low quality institutions are associated with poor economic performance. Previous studies have documented a negative effect of corruption, inadequate property rights, and investor protection on both GDP growth (e.g. Knack and Keefer, 1995; Mauro, 1995) and growth volatility (Acemoglu *et al.*, 2003). Likewise, Bai and Wei (2000) present evidence that weak institutions lower government's ability to collect taxes and consequently lead to inefficient macro policies (such as protectionist measures and high inflation).

Second, political instability and corruption can cancel any benefits of international banks arising from higher expected returns. Erb, Harvey and Viskanta (1996a,b) and Perotti and van Oijen (2001) have shown that political instability (reflected in the same composite political risk measure as the one this paper employs) is followed by lower stock returns. Johnson *et al.* (2000) show that corporate governance measures perform better than standard

[5] In a closely related paper that is complementary to the present paper, Qian and Strahan (2004) show that the legal system explains the design of international bank contracts.

macro variables in explaining the currency and stock market plunge during the East Asian crisis.

Third, poor institutional performance can amplify asset trade frictions. Du and Wei (2004) and Bhattacharya and Daouk (2003), for example, show that high levels of corruption are correlated with higher insider trading activities. In contrast, a high quality legal system minimizes monitoring costs. Corporate transparency and advanced accounting standards mitigate information costs, while bureaucratic and legal efficiency alleviates agency costs by settling disputes arising from contract incompleteness. Large agency costs make the *effective* production technology less efficient and as a result foreign investors are unwilling to lend to countries marked by a poorly functioning legal system. Therefore international banks might be unwilling to bear these costs inspite of some potential gains from higher returns and increased portfolio devitrification opportunities.

Yet little theory exists directly linking foreign investment with political stability and institutional quality. Even less work exists modeling the role of institutions and politics for international banking specifically. Models of international asset trade have analyzed legal system inefficiencies, corruption, or low transparency in the broad context of "*transaction*" costs.[6] The most closely related theoretical work to the present study comes thus from the corporate finance literature. Shleifer and Wolfenzon (2002) build an agency model in which an entrepreneur has a profitable project and seeks external finance. The entrepreneur maximizes her personal wealth, which is a function of the fraction of the project she decides to maintain, the project's profitability, and the amount she is able to divert. Diversion in turn depends on the efficacy of the legal system; looting becomes costly with well-defined and protected investor's rights. Both domestic and foreign investors, *ex ante,* anticipate the probability of diversion and are thus unwilling to invest in low quality legal environment countries. Consequently, capital does not flow from capital-abundant countries to countries with low levels of investor protection. The present study's results demonstrate a strong causal effect of legal system effectiveness indicators on the volume of cross–border lending activities. The results also indicate that what it really matters for international banks is the actual, de facto, quality of the legal system rather how well the securities legislation or the commercial code protects investors.

[6] See, for example, Obstfeld and Rogoff (2000) and the associated discussion, particularly Charles Engel's (2000) comments. Maurice Obstfeld also admitted that costs can be interpreted quite broadly, including language costs and legal system inefficiencies.

# 3 Methodology and Data

## 3.1 Gravity Specification

To quantify the effect of institutions and political conditions on cross-border bank flows, I rely on the "gravity" model. As Portes and Rey have argued, an empirical gravity equation for financial flows arises naturally from international macro models (e.g. Obstfeld and Rogoff, 2000; Lane and Milesi-Ferretti, 2003). Distance captures either transaction costs in the goods market or asymmetric information in the asset market. Since I focus here on institutions rather than in information, I only use the distance variable and do not augment the specification with any specific information variables. Following Martin and Rey's (2004) representative agent model of asset flows, "size" is proxied by (the logarithms of) real per capita GDP and population.[7] I augment the "gravity" equation with composite institutional quality proxies, specific institutional indicators, along with geographical and cultural variables. The exact specification for my analysis takes the following form:

$$\begin{aligned}\ln(F_{i,j,t}) &= \beta_1 \ln(Y_{i,t}) + \beta_2 \ln(Y_{j,t}) + \beta_3 \ln(POP_{i,t}) + \beta_4 \ln(POP_{j,t}) + \\ &\beta_5 \ln(AREA_i) + \beta_6 \ln(AREA_j) + \beta_7 \ln(DIST_{i,j}) + \beta_8 TIE_{i,j} + \\ &\gamma INST_{j,t-1} + \Phi_1 OTHER_{i,t} + \Phi_2 OTHER_{j,t} + a_t + \varepsilon_{i,j,t}\end{aligned}$$

where $i$ and $j$ indicate the "*source*" and "*recipient*" country respectively and $t$ denotes time (quarter). The variables are defined as:

- $\ln(F_{i,j,t})$ is the natural logarithm of gross asset flows from banks located in country $i$ to all sectors (banking and non-banking) in country $j$ in quarter $t$.
- $Y$ is real per capita GDP.
- $POP$ is total population.

[7] In contrast to Obstfeld and Rogoff (2000), who build a model that generates substantial amounts of home bias by introducing transaction costs solely in the goods market, Martin and Rey (2004) add frictions in the asset market. In their set-up, demand for country A's assets is separated between domestic and external. External demand from country B for assets in A is inversely related to (asset) transaction costs. These costs include financial intermediaries' fees and hedging expenses, along with information and consequently monitoring costs. In addition, demand from country B for assets in A are a function of the size of domestic (country A) capital markets, since a larger market implies better diversification opportunities. Finally, flows from B to A are larger the larger the population in B.

- $\ln(DIST_{i,j})$ is the logarithm of the distance between the two countries.
- $TIE_{i,j}$ is a dummy variable that takes on the value one when $i$ and $j$ have common colonial ties or speak the same language.
- $\ln(AREA)$ denotes the logarithm of the land area (in square kilometers).
- $INST_{j,t-1}$ denotes the ICRG composite institutional indicator (political risk) for the recipient country $(j)$ in the previous quarter $t-1$.[8]
- $OTHER$ denotes various other (time invariant and time varying) controls at the source $(i)$ and recipient country $(j)$.
- The specification also includes time fixed-effects $(a_t)$ to capture unobserved time heterogeneity and the upward trend in the volume of cross border activities.
- $\beta, \gamma$, and $\phi$ are vectors of parameters to be estimated, while $\varepsilon_{i,j,t}$ is a Gaussian white noise error term.

The specification resembles Portes and Rey (*forthcoming*), Wei (2000), Portes, Rey and Oh (2001), and Mody, Razin and Sadka (2003), who study other forms of international bilateral capital movements.[9]

## 3.2 Data

My dataset consists of quarterly observations, starting from the first quarter of 1984 until the end of 2002. The data can be separated into three categories: $i$) the cross-border bank flow data $(F_{i,j,t})$, $ii$) institutional performance measures, $INST_{j,t-1}$ (composite and specific), and $iii$) data on other controls.

### 3.2.1 Dependent Variable - Bank Flows

Data on bank flows is taken from the Bank of International Settlement's (BIS) International Locational Banking Statistics (IBS). The BIS IBS database reports aggregate assets (and

[8] Using the contemporaneous value does not alter the results. The lagged value is used to (partly) address simultaneity. In the robustness section, I formally address the issue of endogeneity employing IV estimators.

[9] The results are not sensitive to different gravity specifications. In a previous version of the paper I employed a model with multiplicative gravity terms (e.g. Rose and Spiegel, 2002; Rose, 2004). The results are quantitatively very similar.

liability) holdings of banks, located in 36 jurisdictions ("the *reporting area*") in almost 100 countries ("*the vis-à-vis countries*").[10] Due to insufficient coverage for many "*host*" countries and 17 (mainly developing and "off-shore" centres) "*source*" countries the present study analyzes flows from 19 ($i$) to 51 ($j$) countries. The "*source*" nations are financially developed, while "*vis-a-vis*" nations include both OECD and developing (and some underdeveloped) states. Appendix A lists all sample countries.

Data includes most of banks' on-balance sheet exposure and captures cross-border loans and deposits, debt securities, and other assets. Specifically, the dataset includes not only inter-bank lending (deposits, loans and trade-related credit), but also "*covers portfolio and direct investment flows*" (BIS, 2003a). Flows are estimated by the BIS as the exchange rate adjusted changes in total assets (and liabilities).[11] Appendix B provides a more detailed analysis of the Locational Banking Statistics data-base and gives precise definitions of the dependent variable(s) employed in the study.[12]

### 3.2.2 Composite & Specific Institutional Indicators

I use as institutional environment's proxy, the composite indicator constructed by Political Risk Services (PRS), namely the International Country Risk Guide (ICRG) "political risk" rating.[13] In contrast to most institutional measures that are purely cross-sectional or exhibit limited time-variability, the political risk rating ($INST$) exhibits substantial "*within*" variation. This enables me to address the following key policy question: Controlling for

[10] However, due to the hub nature of international banking activities, the data covers almost all international bank lending. The BIS reports that countries are asked to contribute only "*....when their cross–border banking business becomes substantial.*" (p.5. BIS 2003b)

[11] A concern with previous versions of the BIS data was how to construct flows from the stock data. Simply taking first differences could be very misleading, since a devaluation either at the "*source*" or at the "*recipient*" country might cause a sharp increase or decrease in total assets, even if no capital movements have taken place. Since reporting countries report the currency in which the assets and liabilities are denominated, the BIS has constructed an estimate of the flows, which I employ as my dependent variable. As the BIS acknowledge, this adjusting is not perfect, since flows might have occurred at different exchange rates (see for more details Wooldridge, 2002). However, it is the best proxy possible and far better than attempts to individually construct flows (e.g. Van Rijckeghem and Weder, 2003).

[12] Unfortunately there are many zeros in the data, which makes the logarithmic transformation impossible. In the robustness section, I address the excess zeros and missing observations problem and show that the importance of institutions in cross-border bank flows is robust. Other limitations of the dataset [which are common to capital flows studies] are: $i$) the data do not capture indirect exposure to recipient countries, and $ii$) insufficient coverage of "off-balance sheet" exposure.

[13] Political Risk Services (PRS) is a risk rating corporation. Although measurement error might be present, it is exactly the type of data that institutional investors, like banks, take into account, when making their asset allocation decisions. In Section 7.3, I formally address issues arising from measurement error employing instrumental variables (IV) techniques.

unobserved country heterogeneity and time-invariant omitted variables, is an institutional improvement associated with an increased volume of international capital movements? In addition it is reported at a monthly basis and can be directly merged with the BIS quarterly data. Finally PRS started reporting this measure in the early eighties (1984), perfectly matching the BIS starting date.[14]

The "Political Risk" rating is a composite index of political, legal, social, and bureaucratic institutions. It is based on PRS staff subjective assessment of various institutional arrangements and ranges from zero to one hundred (with lower values suggesting poorly performing institutions). Although this measure (and various of its subcomponents) have long been used by the empirical macro literature (e.g. Hall and Jones, 1999; Knack and Keefer, 1995), only recently has it been employed by studies analyzing international investment patterns.[15] Alfaro, *et al.* (2003) use this index to assess institutions' impact on net inward investment, while Gelos and Wei (2002) employ it to explain the portfolio allocation choice of emerging market funds.

Yet it is not crystal-clear what such a composite rating captures. Perotti and Van Oijen (2001), for example, show a strong correlation between the political risk rating and privatization policies, while Alfaro *et al.* (2003) with democracy measures. To solve the institutions quality vs. politics question, which has attracted recently a considerable debate, I will present results with both the political risk rating and with more specific measures of institutional quality.[16] For the latter, I exploit recently compiled datasets on legal and bureaucratic quality. I proxy the quality of laws and corporate governance practices with the widely-used anti-director's rights index (La Porta *et al.*, 1998). For legal system performance I rely on two measures compiled by Djankov *et al.* (2003): *i*) a measure of contract enforceability and *ii*) the time it takes to evict a tenant for nonpayment. Measures of the structure and profitability of the banking sector are taken form La Porta, Lopez-de-Silanes,

[14] Actually the BIS dataset starts in 1977. Data coverage during the first decade, however, is limited to a couple of industrial countries.

[15] Hall and Jones (1999) decompose the ICRG "political risk" index and use only the scores on *i*) law and order, *ii*) bureaucratic quality, *iii*) corruption, *iv*) risk of expropriation, and *v*) government repudiation of contracts. They label this measure "Government Anti-diversion Policies" index. The index I use is broader since it includes religious tensions, war, ethnic conflict, etc. For more details see Panel of Appendix B.

[16] See Acemoglu and Johnson (2003) for an effort to "*unbundle*" institutions and empirically quantify the impact of specific institutional characteristics on economic development. For such analysis, one would ideally like to use the various sub-indicators of the political-risk indicator (see Appendix *B*). However, PRS does not report the sub-components of these ratings at a quarterly frequency. Thus I rely on other variables that are not the actual sub-components of the political risk rating, but capture the same institutional characteristics. By doing so, I (partly) address the potential measurement error of the political risk rating.

and Shleifer (2002), while for corruption I use the Transparency International (TI) composite index.

### 3.2.3 Other

Common language, ethnolinguistic, and geographical variables included in the gravity model originally come from the CIA Factbook and have been retrieved from Andrew Rose's webpage. GDP, population and other macro variables are taken from the IMF's International Financial Statistics. To control for macroeconomic and financial sector developments, I also utilize the other two risk ratings produced by ICRG, the "economic" and "financial" risk measures. Appendix B provides the sources and detailed definitions of all variables employed.

## 4 Preliminary Evidence

Table 1 presents descriptive statistics, while Table 2 provides the correlation matrix of the variables employed in the regression analysis. Cross-country institutional performance differs enormously. For example, Canada, Chile, and the United Kingdom get (a score of) 5 in the $(0-6$ scale) anti-director's rights index, while Belgium gets a 0, and Germany and Italy a disappointing 1. The variability of the *de facto* legal quality indicators (contract enforceability and eviction time) is even higher. For example in ten sample-countries it takes more than a year to enforce one of the simplest legal cases, tenant eviction for nonpayment.[17] Likewise, the zero to ten contract enforceability index, which is based on the rigidity and formality of the legal system ranges from 4.29 in Indonesia and Peru to almost 9 in Switzerland.

The composite institutional index ranges from 33 (in the Philippines in the first quarter of 1991) to 97 (in Switzerland and the Netherlands in various periods). The "*within*" country variation, which is particularly desirable in a panel context, is also substantial: The Philippines, for example, begin in 1984 with a low score of 38. After Marcos regime collapse, however, the Philippines experience a notable institutional-political improvement. This is reflected to the political risk measure, which increased to 76 (end of 1997) and then fell to 65 (at the end of 2002). The political risk rating is, in turn, highly correlated with corruption and contract enforceability (correlations above 0.70), although these variables are taken from alternative sources (not PRS) and enter with just a 4% loading (see Appendix B).

[17] These countries are: Argentina, Japan, Italy, Poland, Austria, Bulgaria, Colombia, Israel, Norway, and Hungary.

The correlation structure suggests a notable association between the composite institutional index and bank flows. The ICRG "*political risk*" index is substantially correlated with flows both in assets and liabilities (correlations of 0.31 and 0.34 respectively). Figure 1 plots the cross country scatter of aggregate bank flows against the mean composite institutions index and illustrates a clear positive association. A similar relationship between gross banking transactions and corruption and legal system quality is illustrated in Figures 2 and 3 respectively.

# 5 Benchmark Results

I begin by estimating the gravity model using plain OLS (pooling cross-section and time-series). I then show that the results are robust to alternative panel methodologies that potentially correct for unobserved individual characteristics and residual autocorrelation. Throughout the regression analysis, $t$ statistics based on standard errors adjusted for clustered panel-wise (country pairs) heteroskedasticity are reported.[18] First, I concentrate on the time-varying composite institutions index (ICRG "political risk" indicator). Second, I quantify the effect of particular institutional arrangements on cross-border bank lending.

## 5.1 Political Risk-Composite Institutional Indicator

### 5.1.1 Pooled OLS

Table 3 presents the benchmark OLS estimates. The "gravity" model works well in several dimensions. First, the model fits the data quite well. One can explain more than forty percent of the overall variability in gross bilateral bank flows just with standard gravity factors (namely distance, ethnolinguistic ties, land area, income, population and per capita GDP). This is lower than in goods' trade studies (where the $R^2$ is around 0.65), but quite high for (typically noisy) quarterly data. Second, in all perturbations the "gravity" terms consistently enter with stable and well-behaved coefficients. Distance, for example, has a

[18] Regression diagnostics indicate no serious mis-specification problems. Box-Cox tests suggest that the usually applied in gravity models logarithmic transformation is quite reasonable ($\lambda = .028$). There are also no evidence of non-stationarity. Correcting for clustered heteroskedasticity and autocorrelation yields large standard errors (compared to either standard Huber-White or Newey-West standard errors) and thus the reported t-statistics are the most conservative.

coefficient ranging from −0.6 to −0.8, close to previous estimates in asset flow studies. Although it might be puzzling to interpret a negative effect of distance on asset trade, since transaction fees are typically small, distance seems to proxy well for information asymmetries and other non-standard costs.[19] Having linguistic, historical or colonial ties increases bilateral bank flows considerably, suggesting that culture and trust have a role in financial patterns. The coefficients on the "size" measures are positive and significant. Richer and financially developed nations engage more in cross-border lending activities as do larger (in population terms) countries.[20] In spite of the neoclassical prediction, capital is directed towards relatively wealthy countries. Martin and Rey (2004) attribute this result to increased diversification opportunities in richer nations, while Gertler and Rogoff (1990) argue that capital market imperfections are mitigated in affluent countries, since wealth can serve as collateral.

Columns (2), (3) and (4) add the composite institutional index (ICRG political risk) to the gravity equation. The coefficient on $Inst_{j,t-1}$ is at least three standard errors above zero. Further, the model's fit has substantially increased (the $R^2$ has jumped from 0.45 to above 0.50). In columns (3) and (4) I control for macroeconomic developments both in the "source" ($i$) and the "destination" ($j$) country. Numerous studies (Calvo, Leiderman, Reinhart 1993, 1994; Frankel and Roubini, 2001) have documented a significant negative effect of global interest rates on "*North to South*" capital flows. Consistent with this result, the coefficient on the lending rate ($Rate_{i,t}$) in the "source" country is significantly negative. This implies that high interest rate periods are associated with lower levels of bank lending activities not only to developing but also to industrial countries. In column (4) I add inflation ($Inf_{j,t}$) to control for economic conditions in $j$. The coefficient on inflation is negative, but statistically insignificant. Although in many of the subsequent specifications $Inf_{j,t}$ enters with a

[19] Buch, Kleinert, and Toubal (2004) provide a thorough review of both the theoretical foundations and recent empirical results on the impact of distance on bilateral trade and asset flows. Portes and Rey (*forthcoming*) show that when other factors that more directly capture information costs (telephone traffic, foreign newspapers sales) enter an equity flows gravity specification, the coefficient of distance decreases substantially (although it is still negative and significant). Distance might also be capturing (part of) the effect of trade on capital flows. Aviat and Coeurdacier (2004) present cross-sectional evidence that distance's significance in asset trade studies is partly driven by a strong correlation between asset and trade flows. Their regressions reveal that when bank holdings and trade are simultaneously estimated the effect of distance in the bank holdings regression shrinks.

[20] The only standard gravity variable that does not enter positively and significantly (as it does in trade studies) is a common border dummy, which takes on the value one when the two countries are adjacent. This comes at no surprise though, since we expect adjacency to be much more important in goods trade. Including the common border dummy yields almost identical coefficients to those presented in Table 3 (and in all subsequent tables).

significantly negative coefficient, its magnitude is extremely small.[21] Other macroeconomic controls, such as GDP growth appear insignificant.[22] Note that the coefficient on the composite institutions index has remained stable and is still significantly positive. In columns (5) and (6) I use the natural logarithm of $Inst_{j,t-1}$ to directly interpret the coefficient as an elasticity. The specification also includes regional and income level dummies to capture unobserved "recipient" country heterogeneity.[23] Not only has the $\gamma$ coefficient retained its statistical significance, but its magnitude is economically large. Its scale implies that conditional on geography and economic development (captured both by per capita GDP and the income dummies) a one percent increase (decrease) in institutional efficiency is followed by a rise (decline) of approximately 2 percent in the level of international banking activities.

### 5.1.2 Alternative Estimators

Table 4 presents estimates based on alternative panel methodologies. Column (1) reports the "between" estimator. Although this method removes the time series dimension (by using mean values), it is useful to identify which countries receive on average the bulk of international bank capital. The estimated coefficient implies an even larger institutional effect on international bank lending (elasticity $\approxeq$ 4). The $R^2$ has also jumped to 0.77. This finding extends the recent cross-sectional results of Alfaro *et al.* (2003), who show that institutional quality can explain why capital does not move towards poor nations. My estimates suggest that countries with poorly performing institutions not only receive substantially less net foreign inflows, but also engage much less in cross-border lending and borrowing activities.

An important policy question is whether foreign investors actually "reward" structural policies that improve the institutional environment through increased investment. The fixed-effects "*within*" estimates directly answer this enquiry. The estimates in column (2) should,

[21] The results are similar if one substitutes inflation with the lending rate in the capital recipient country. The coefficient on lending rate in $j$ is in most specification negative and significant. However, its size and magnitude is very small.

[22] Frankel and Roubini (2001) describe this peculiar finding as follows: "*....(research) came to a surprising conclusion: the most important identifiable factors behind the flows were US interest rates and other macroeconomic variables external to the emerging market countries. Capital was heading South because low rates of return were on offer in the North. This was a surprising conclusion because the more common belief at the time was that domestic factors within the emerging market countries were responsible, particularly pro-market policy reforms..*" Studies in FDI and portfolio flows have likewise demonstrated that this finding applies also to advanced countries.

[23] The high income and the regional dummies come from World-Bank's country classification.

however, be interpreted cautiously, since this estimation ignores time invariant factors, such as distance and ethnolinguistic ties, while weknow *ex ante* that these factors are important determinants of cross-border lending. The coefficient on the composite institutional index has decayed but is still positive and highly significant. The estimated elasticity suggests that if a country implements structural policies that improve the institutional and political environment, bilateral bank flows are expected to increase by approximately 3.6% at a quarterly basis. Such improvements are not rare in my sample. Argentina, for example, experienced a substantial decline in political risk after the fall of the military dictatorship and the end of the Falklands War in 1984 (ICRG political risk jumped from 50 to 55). An even greater improvement occurred in Indonesia in 1991, reflecting the radical political power decentralization (political risk jumped from 44 in the first quarter of 1990 to 58 in the first quarter of 1991). Democratizations are also associated with significant declines in political risk: Examples include South Africa after the 1994 elections that ended the "apartheid" or Chile in 1990 when Augusto Pinochet was removed from power.

Another approach, which fully utilizes the panel information, would be to estimate a "random-effects" model. This approach introduces country-pair fixed-effects, while allowing for time invariant regressors. Random-effect estimates are typically more efficient, since they use information both "*between*" and "*within*" panels. Their consistency, however, crucially relies on individual effects not being correlated with the disturbances.[24] Random-effect estimates are reported in column (3). The statistical and economic significance of the RHS variables has remained stable. The coefficient on the political risk is still positive and significantly different from zero at any conventional level.

Columns (4) and (5) report estimates of a "quasi-fixed effects" model. The specification in column (4) includes a vector of "source" country dummies that control time-invariant characteristics in the lending countries that are difficult to observe, like differences in reporting, accounting or the exact definition of financial institutions' cross-border transactions. Adding "source" country fixed effects also controls for the disproportionately large impact that certain countries have in the international banking system.[25] In column (5) a vector

[24] Unfortunately, in this case, a Hausman specification test is not particularly helpful. Many time-invariant factors are significant and one cannot distinguish whether the observed fixed-effects correlation with the error term of the within estimator is due to factors omitted in the within estimation (distance, ethnolinguistic ties, etc.), but included in the random-effects or other truly unobserved factors. Moreover, our sample is not randomly drawn from a larger population and "random-effect" estimation might not be theoretically appropriate. For more details see Baltagi (2001) and Wooldridge (2002).

[25] Wei (2000) provides a more analytical discussion on the merits of the "*quasi-fixed-effects*" model in

of "host" country dummies is included to control for unobserved heterogeneity in the recipient countries. The specification given in column (6) includes both a vector of "source" and a vector of "recipient" country fixed-effects. The elasticity of institutions in the double-fixed effects model is significnat at the 95 confidence level and similar in magnitude to the fixed-effects model (column 2). This suggests that controlling for unobserved time-invariant characteristics both of the capital recipient and the capital investing country, an institutional enhancement is associated with a significant increase in bilateral banking activities.

An important econometric consideration concerns the structure of the error term. Since flows are estimated by the BIS as the exchange rate adjusted change in total assets, first-differencing might lead to an autocorrelated error term, which would in turn corrupt inference. Columns (7) and (8) give the Prais-Winsten and random effect GLS estimates, respectively, that correct for first-order residual correlation.[26] Although autocorrelated disturbances are not present if we pool all data together, persistence might occur in specific country-pairs. Feasible GLS estimates that allow for arbitrary panel-specific autocorrelation (and heteroskedasticity) are given in the last column. The point estimates are similar to OLS, suggesting that autocorrelation is not corrupting inference.

## 5.2 Specific Institutional Characteristics

Exactly which institutions or policies are associated with higher levels of financial development and cross-border lending? I attack this key policy question by investigating which specific institutions are of foremost importance in attracting high volumes of foreign capital. Moreover to distinguish the importance of institutions and politics, I present specifications where the political risk rating and the specific institutional measures are jointly estimated.[27]

gravity models of asset trade.

[26] A formal test of autocorrelation (Wooldridge, 2002) rejects the presence of serially correlated disturbances at any standard confidence level.

[27] The specific institutional indicators are purely cross-sectional. Institutional persistence, however, suggests that this is not a serious drawback. One could argue that estimation and inference in a panel context is, however, problematic. A solution is to estimate cross-section regressions either on mean values or at specific years. Such estimates yield an even larger impact of institutional performance on international banking activities. These results are available upon request.

Another problem arises, because ideally in the specifications that include both the composite institutions-politics ICRG rating and specific institutional measures (like corruption or legal system quality) one would want to exclude from the composite measure the part that the specific index measures. Due to data unavailability on the specific sub-components of the political risk rating at the quarterly basis, however, this is not feasible and if anything avoiding making this correction should bias the results against finding a systematic relationship.

In the rest of the paper I will present results based on various panel techniques, adding either "source" or "recipient" country fixed-effects or both. The coefficient's statistical significance and magnitude is not particularly sensitive to the exact specification.[28]

### 5.2.1 Corruption

Theory on FDI has stressed the malignant role of corruption (Shleifer and Vishny, 1994) and transparency (Mody, Razin, and Sadka, 2003) in attracting foreign capital. While there is some empirical evidence supportive to these models linking corruption to FDI (e.g. Wei, 2000), its impact on other types of capital flows has not been examined.

In Table 5 I augment the baseline gravity model with the TI corruption index (lower numbers in the index correspond to higher corruption). The coefficient estimates show a strong and robust negative effect of corruption on international banking activities. The point estimate in column (1) implies that if Peru, which scores 4.7 (in a $0-10$ scale), tackles corruption up to the level of Costa Rica (8.3), then bilateral bank flow transactions will increase by almost 1.5% $[(8.33-4.70)*0.4144=1.504]$ at a quarterly basis. Corruption retains both its statistical and economic significance, even when the "political" or "economic" risk measures are included in the specification (columns (2) and (3) respectively).[29]

This result contradicts Wei and Wu (2001), who document either an insignificant or even positive effect of corruption on international bank lending activities. The present study, however, differs in many dimensions from the Wei and Wu (2001) study: First, their results are based on cross-sectional regressions, with data averaged for the $1994-1996$ period, while the present study utilizes data for 18 years. Second, their sample covers substantially fewer lending countries ($i$). Third they study inter-bank loans using another BIS dataset, while the Locational Banking Statistics, I exploit, include also equity and FDI flows. Fourth, and most importantly, their analysis concentrates on how corruption affects the composition of capital flows, not how it impacts bilateral bank lending. My results are, however, in line with their model on corruption's effect on capital flows.[30]

[28] Results based on other panel-techniques (like those employed in Section 5.1.2) for the effect of specific institutional characteristics and not reported are available upon request.

[29] The "economic risk" rating is a weighted sum of the following macroeconomic factors: GDP growth, inflation, fiscal balance, current account and GDP per capita. For more details see Appendix $B$.

[30] Wei and Wu (2001) also acknowledge that it is peculiar that foreign banks seem to lend more to banks in corrupt countries. The results presented in this study suggest that not only this effect is not robust, but actually (and in line with their theoretical prediction) corruption impedes cross-border bank lending activities.

### 5.2.2 Legal System

To proxy for the quality of the laws in place I introduce the antidirector's rights index into the gravity model ($Anti\_direct_j$). The estimated coefficient reported in columns (4)-(7) is, however, small and in most specifications insignificant. This accords with Portes and Rey who find this crude measure of investor protection to have no systematic impact on gross equity flows.

International investors do not care so much about how well laws, acts and commercial codes are designed. Rather, they focus on rights actual protection and enforcement. Likewise, theory concentrates on how fast and to what extent legal rights are safeguarded by the judicial system (Djankov *et al.*, 2003). As a proxy for the *de facto* efficacy of the legal system, I use a measure of contract enforceability, which is based on legal system's formality and speed. This variable ($Contract_j$) always enters the specification with a significantly positive coefficient. Even conditioning on the overall institutional quality and political stability (in column (5)), $Contract_j$ has a large economic effect: the point estimate suggests that if Portugal, (which has the lowest level of legal protection in the European Union, scoring 4.54), modernizes its judicial system to Belgium's level (which scores 8.40), the volume of cross-border banking activities will increase by more than 1% on a quarterly basis $[(8.40-4.54)*0.298=1.15]$. In the last column I employ the time it takes to evict a tenant for nonpayment ($Legal\_time_j$) as an alternative measure of legal efficiency. The estimated coefficient implies that if the judicial process in Chile, where it takes approximately 240 days to evict a tenant for nonpayment, becomes as fast as in Brazil, where it takes 120 days, the volume of cross-border banking activities is expected to increase by almost 14% ($[(240-120)/240]*0.275 \simeq 0.1375$).[31]

Jointly, the coefficient estimates suggest that modifying and upgrading anachronistic laws is a necessary yet not sufficient condition to attract foreign (bank) capital. A fast-proceeding judicial process and high quality law enforcement are far more important. Finally, legal system quality indicators retain their significance, even conditioning on corruption and overall economic environment (column (7)), hinting that these two institutional structures play an independent role.

[31] In the previous version of the paper, I also employed other legal quality measures. Specifically: *i*) a 0 to 7 legal formalism index, *ii*) the time it takes to collect a bounced check, and *iii*) the time it takes to start up a new business. Djankov *et al.* (2002, 2003) show that these variables are good proxies for the operational performance of the legal system and bureaucratic quality. All these variables are strongly correlated with each other and the results are quantitatively very alike. These results are available upon request.

### 5.2.3 Government Ownership of Banks

A somewhat neglected characteristic of financial systems is state control of the banking system. La Porta, Lopez-de-Silanes and Shleifer (2002) document that not only is government ownership of banks pervasive around the globe, but it is also associated with low levels of financial development and weak growth rates. They distinguish between "*development*" theories that stress the beneficial aspects of government ownership and the "*public-choice*" tradition that emphasizes the negative consequences of state's active involvement in the credit market. In her study on the lending practices of Italian banks, Sapienza (2004) offers an intuitive explanation for the pro public-choice evidence given by La Porta *et al.* (2002): Italian state owned banks charge substantially lower interest rates than privately-run banks and lend substantially more in areas where the government has a large clientele. Government ownership, however, need not have a negative effect for foreign investors. It can actually minimize credit risk, since governments often safeguard their banks' debt. If this "*development*" prediction holds, then one would expect, other things being equal, higher international lending to countries with high levels of state ownership of the banking sector.

To quantify the effect of government control, I augment the baseline specification with a variable representing the share of the top 10 banks in a given country owned by the government of that country ($Gov\_Own_j$). This cross-sectional variable is taken from La Porta *et al.* (2002) and corresponds approximately to the middle of the panel (approx. around 1995). Figure 4 plots the mean of the logarithm of cross-border bank flows against $Gov\_Own_j$ and the clear negative association rejects the "*development*" conjecture. The regression results in Table 6 are not only in line, but also advance the recent pro-"*public-choice*" findings of La Porta *et al.* (2002) and Sapienza (2004): Foreign banks realize that state-controlled financial institutions promote political rather than profit maximizing objectives; consequently government ownership of banks heavily impedes international lending. This suggests that the agency costs associated with state control by far surpass the benefits gained from implicit or explicit guarantees. The point estimates imply that controlling for the macroeconomic environment (with the composite economic risk rating in column (3)), increasing the government's share in the banking system by one percent decreases the level of cross-border bank lending by more than 1.6%.

Previous studies have shown that state ownership is strongly correlated with a poorly performing banking system. To isolate the effect of state ownership, I directly control for

the operational performance of the banking system, employing a measure of bank soundness ($Bank\_Sound_j$) and an estimate of banks' overhead costs ($Overhead_j$). Moreover, to assess how the banking system's structure affects inter-bank activities, in columns (4)–(6) I use inter-bank (instead of aggregate) flows as the dependent variable. The health and operational performance of the banking system in the recipient country is a crucial factor driving gross inter-bank international capital flows. As indicated by the significant coefficients on both $Bank\_Sound_j$ and $Overhead_j$ international banks invest substantially less in countries with low bank ratings and high operating costs. After controlling for the institutional environment and the health of the banking system, state ownership is still associated with substantially lower levels of international inter-bank lending.

These results offer an intuitive explanation for financial intermediaries' illiquidity in relatively poor countries: government control of the banking system discourages both domestic capital accumulation and foreign lending. Numerous studies point out that a banking system's liquidity has a causal effect on economic growth. The evidence, therefore, suggests that privatizing and liberalizing the banking system will drive foreign bank capital and relax banking system liquidity constraints, fostering in turn growth and investment.

# 6 Further Evidence

## 6.1 Developed vs. Developing Countries - EU membership

A major concern regarding most empirical analyses on institutions is whether the estimated effect is driven by the substantial variability between rich and developing (or underdeveloped) countries. Institutions are strongly correlated with other, difficult to observe, economic (or financial) factors that distinguish industrial from underdeveloped countries. Although the "fixed" and "quasi-fixed" effect estimates address this point, I reestimated the basic econometric model distinguishing between high and medium income countries. This also enables me to assess the effect of the ongoing European integration in cross-border banking activities.

Columns (1)–(4) in Table 7 give estimates for the effect of institutional performance in high income countries (as classified by the World Bank) only.[32] The model has retained its

[32] In the previous version of the paper, I distinguished between developed and developing countries using OECD membership. The results are almost identical if one uses current OECD member countries, or the

explanatory power ($R^2 > 0.50$) and all "gravity" variables (distance, ethnolinguistic ties, per capita GDP, land area, and population) enter with robust coefficients. The coefficients on the political risk rating and the more specific institutional indicators appear not particularly sensitive and highly significant. The most conservative estimate (column (4)) for the political risk coefficient, for example, implies that a one percent institutional improvement is followed by an almost two percentage increase in the volume of international bank flow.

Columns (2) to (4) include two dummies for European Union (EU) membership: the first takes a value of one when one of the two counterparts is an EU member ($EU\_one$); the second equals one when both countries are EU members ($EU\_both$).[33] The EU Single Market and the subsequent Financial Service Action Plan aimed to remove both direct and indirect barriers in cross-border movements of capital by harmonizing banking law and financial services' regulation. Moreover, the single currency has eliminated exchange rate risk. The results suggest that EU membership has led to a substantial expansion of banking activities across member countries. Although the coefficient on the $EU\_one$ dummy is statistically indistinguishable from zero, joint EU membership has a large effect. The estimates imply that cross border bank flows between member states by approximately 30% ($\exp(0.27) - 1 = 0.31$).[34] This result suggests that substantial integration has taken place not only in equity and debt markets, but in the banking sector as well.[35] Banking integration has taken the form of increased cross-border lending and borrowing rather than through mergers and acquisitions, as in the United States. This result, I believe, has direct policy implications, since recent studies show that the U.S. banking sector integration has not only been associated with substantial growth gains (Jayaratne and Strahan, 1996), but also led to business cycle synchronization across states (Morgan, Rime, and Strahan, 2004).

## 6.2 Political, Economic and Financial Risk

Table 2 shows a strong correlation between the "political risk" measure and the other two ICRG risk ratings: the "economic" and "financial" risk indicators. One could suspect that

pre-1995 OECD members or the G-7 or the G-10 countries.

[33] See for a similar approach Glick and Rose (2002) and Rose (2004), who quantify the impact of trade agreements on the volume of bilateral trade flows.

[34] Inserting EU member dummies in the full sample of countries yields larger coefficients. I report the most conservative estimates, since I want to avoid EU membership capturing an OECD or a "high income" countries effect.

[35] Recent reports on European financial integration (e.g. Baele *et al.*, 2004) document considerable convergence in bond and equity markets. Yet these studies suggest that the banking sector has been left behind.

the previously estimated coefficients actually capture "economic" and/or "financial" risk rather than institutional and/or political conditions. To identify which risk is of most importance for foreign banks when making their international capital allocation decisions, in Table 8 I estimate gravity models augmented with each of the three risk ratings.

Erb, Harvey and Viskanta (1996a,b), for example, find the "economic" risk to be the key factor with "political" risk being the least informative in predicting future equity and bond returns.[36] My results reveal a different picture. Although all risk characteristics are significant drivers of foreign (bank) capital, "political risk" is the most important of the three. Not only is the "political risk" coefficient the largest in magnitude, but the specification with this index has the best explanatory power (in terms of $R^2$). This result is strengthened in columns (4)–(6), where I focus on inter-bank flows and add a full set of "recipient" country dummies to check whether, controlling for idiosyncratic country factors, foreign banks primarily examine political/institutional, economic or financial developments. Although "political risk" effect has decayed, it is the only component of risk rating entering with a significantly positive coefficient (see for a similar finding, Gelos and Wei, 2002).[37]

Economic enters all specifications with a significantly positive coefficient. Although this might seem logical, in a mean-variance model framework this effect is not straightforward. High risk is associated with increased volatility both also with higher expected returns. So it depends on the model's parameters which effect dominates. The results indicate that the negative channel of high volatility dominates the positive impact of higher expected returns.[38]

## 6.3 Liability Flows

In Table 9 the basic specification is re-estimated with the logarithm of liability flows from $i$ to $j$ as the dependent variable. Interestingly the model performs well for liability flows. The

[36] Erb, Harvey and Viskanta (1996a) give also detailed correlations and a lucid analysis of the different available indicators of country risk.

[37] I also estimated specifications including the economic and the political risk (and also financial risk) simultaneously. Although multicollinearity seriously plagues these estimates, the coefficient on the political risk indicator in $j$ is always positive and has the largest of the three risk ratings magnitude.

[38] When I restrict estimation in the European Union subsample (before the 2004 Enlargement), the coefficient on economic risk becomes negative and significnat [when the model in column (2) is estimated only on intra-EU flows the estimated elasticity of economic risk is $-2.204$ ($t - stat. = 3.15$).] This implies that conditioning on EU membership, international banks invested more in the relatively riskier countries to realize benefits arising from higher expected returns (for example foreign institutional investors heavily invested in government securities and equities in the countries of the South just before the adoption of the Euro).

results imply that institutions and/or political risk both at the "*source*" and the "*recipient*" countries (columns (5) and (6)) are important drivers not only of international investment, but also borrowing flows. This results is robust to the inclusion of "source" or/and "recipient" country fixed effects. Since international borrowing is less risky than investing, such that low-quality institutions need not necessarily be such an important factor for the borrower, this result is puzzling. It can be rationalized, however, as follows: First, due to the hub structure of the international banking system, financially developed countries (mainly Germany, the United States, Japan, and the United Kingdom) are simultaneously both the big lenders and borrowers. Second, foreign liabilities of country $i$, held by residents in $j$, can serve as collateral for country $j$ borrowing, thus increasing bilateral lending by reducing the riskiness of foreign investment. This finding extends previous results of Moshirian and Van der Laan (1998) and Buch (2000), who examined the international lending behavior of US, UK and German banks. It is also consistent with Ruffin and Rassek (1986), who model and show the complementary nature of the investment and financing decisions of large US multinational corporations. My results, which cover a much wider sample of countries and years, suggest that foreign assets and liabilities are mutually dependent. Institutional performance and political developments can therefore explain both international lending and borrowing.

# 7 Sensitivity Analysis

The evidence reveals a strong link between political institutions and gross bank flows. Political risk, along with legal efficiency, corruption, government ownership of banks and EU membership in particular, crucially influence the volume of international capital (bank) movements. In this section I provide some robustness checks, checking: *i*) potential omitted variables bias, *ii*) the BIS data quality, *iii*) endogeneity and measurement error and *iv*) the stability of the model in various samples.

## 7.1 Additional Controls

Low levels of human capital reduce the return of foreign capital. Since human capital is highly correlated both with wealth and well-functioning institutions, the previous estimates might be capturing part of education's effect. In addition, Alsan *et al.* (2004) have recently shown that health is an important determinant of FDI. They argue that life expectancy

captures labor productivity more adequately than education. In Table 10, I present various panel specifications adding secondary schooling and/or (the log of) life expectancy. The coefficients for schooling and/or life expectancy are both positive and highly significant. Consistent with a neoclassical production function, more educated societies, other things equal, engage more in international banking activities and have consequently more liquid financial intermediaries. Most importantly, neither the effect of the aggregate institutions-political risk index nor that of all other specific institutional measures has lost economic and statistical significance. The estimates thus suggest that wealth (proxied by the log of GDP), human capital (proxied by schooling and/or life expectancy), and politics (captured by the ICRG "*political risk*" indicator) and institutions (measured by the specific institutional variables) all contribute explaining the low volume of international capital flows in poor countries.

The exchange rate regime can also play an important role for foreign investors. Many countries have adopted fixed exchange rate regimes to signal their commitment to sound monetary policy and attract foreign capital. In the last three columns I exploit the recent Rogoff and Reinhart (2004) exchange rate regime classification and add measures of the exchange rate regime's rigidity. The "fine" classification ($ER\_regime1_{j,t}$) ranges from 1 to 15, while the "coarse" classification ($ER\_regime2_{j,t}$) from 0 to 6. For both measures higher levels suggest more liberal exchange rate polices.[39] The estimated coefficients are both at least two standard errors below zero, implying that foreign banks prefer investing in countries with fixed exchange rate regimes. The estimates retain their significance even in the "*within*" specification (column (6)), suggesting that if a country moves towards a less flexible exchange rate arrangement it will receive more foreign bank capital. Even though fixed exchange rate regimes are associated with sharp devaluations, it seems that foreign banks prefer bearing this risk rather than that arising from non credible monetary policy and high exchange rate volatility (see Gelos and Wei, *fortcoming* for a simial result).

## 7.2 Data Limitations

Not all countries receive foreign bank credit in all quarters. Specifically, the BIS dataset includes many zeros, especially in transactions towards emerging and non-developed countries.

[39] A score of 1 (e.g. the Euro member countries), for example, implies a super-fix, a 2 (e.g. Argentina in the nineties) a currency board, etc. The correlation of "*fine*" and "*coarse*" classification in my sample is 0.9336.

Since a log transformation has been applied these observations have not been considered until now. Careful data examination reveals that these zeros represent non reporting gaps rather than actual zero flows. Still, I re-estimated all previous specifications replacing zeros with a value of one, yielding a log value of zero. Table 10 reproduces estimates after this transformation. Column (1) reports OLS estimates. Since the data has now many zero observations, columns (2)–(5) give Tobit estimates. Due to the excess zero observations, the overall model fit has worsened. The sign and statistical significance of all coefficients has, however, remained unchanged. Corruption is still negatively associated with capital inflows, as is state ownership of the banking system. Likewise, a high quality, efficient and fast legal system is particularly attractive to foreign banks.

## 7.3 Endogeneity and Measurement Error

Institutional quality indicators are plagued by measurement error. This problem is particularly severe in the political risk rating, since it is impossible to summarize in a single variable all dimensions of the institutional and political environment. Classical measurement error, however, yields an attenuation bias, suggesting that results so far have been conservative.

A more important concern is, thus, reverse causality, which, if present, will produce over-estimated coefficients. An increased volume of foreign capital may itself lead to institutional improvement. Domestic firms may, for example, adopt stricter accounting standards and apply more transparent corporate governance practices. The government may remove capital account restrictions and privatize state enterprises. Even if no reverse causality is present, over-stated coefficients can arise if the researchers at PRS assign higher ratings to countries that receive more inward investment.

These problems, however, can be addressed with suitable instruments. Following recent studies on the determinants of institutions, I instrument the political risk index with latitude and measures of linguistic, ethnical and religious fragmentation (column (5)).[40] The first

[40] Hall and Jones (1999) showed that geography, latitude in particularly, is strongly correlated with high quality institutions. Alesina *et al.* (2003) document that the ethnolinguistic composition of the society is strongly correlated with institutional and economic performance. I also experienced with the Acemoglu *et al.* (2001) settler mortality rate as an instrument of institutional quality. The results are robust and not driven by the exact instrument set. Adding in the instruments set in column (5) specification the log of settler mortality yields an even larger coefficient on political risk of 3.34 (with a $t-$ratio of 2.88). I decided not to report IV estimates with the settler mortality measure, since my sample consists mainly of developed countries, where this variable is unavailable.

stage diagnostics indicate no problem of weak instruments.[41] In addition the Hansen test of over-identifying restrictions does not cast doubt on the instruments validity ($p$-value 0.184). The coefficient not only has retained both its statistical and economic significance. The point estimates imply that a one percent improvement in the political risk dimension is associated with approximately 2.5% rise in cross-border banking activities.

Due to its secrecy and illegality, corruption is likewise difficult to compute. The TI measure I use is a blend of various perception-based measures. Although this minimizes systematic bias, it introduces noise, which attenuates the coefficient.[42] Thus, in column (6) I follow Mauro (1995) and instrument corruption with measures of fractionalization. The instrumented corruption measure enters the gravity model with a statistically significant and relatively stable coefficient.

In the last column, I instrument the two legal quality measures. Following La Porta *et al.* (1998), who argued that legal origin has affected the evolution and quality of the legal system, I use legal origin dummies. The coefficient on the *de facto* legal quality measure is statistically significant and robust suggesting that our previous estimates were neither driven by reverse causality nor by systematic measurement error.[43]

## 7.4 Sample

Table 12 provides additional robustness checks. I perturb the model in various ways to check the results' stability in different samples. Each panel reports three gravity specifications: $(i)$ with the political risk rating ($INST_{j,t-1}$) only, $(ii)$ with the specific institutional measures only, and $(iii)$ with both the time-varying political risk rating and the specific cross-country institutional indicators. In Panel A, I have excluded bank flows from the United States to check whether the results are driven by the fundamental role of the U.S. in the international

[41] See Staiger and Stock (1997). The first stage overall $R^2$ is 0.385 and the $t$-statistics of the exogenous instruments all greater than 10.

[42] The corruption measure can not capture whether the bribery can guarantee that the business is going to proceed or not. Moreover, it does not tell us anything about the "*industrial organization*" of corruption (Shleifer and Vishny, 1994. Whether, for example, there are various governmental agencies competing for bribes (as in Russia) or there is a domestic corruption monopolist ). For a more detailed discussion of the various corruption indicators and the conceptual issues surrounding corruption see Wei (2000).

[43] A possibility of course that can not been ruled out is that the upward bias arising from reverse causality exactly cancels the attenuation effect. A concern with the IV estimates is that the instruments are purely cross-sectional, while the second stage regression has time dimension as well. I thus estimated the second stage on averaged data. The estimated coefficients imply an even larger impact of political risk, corruption, and contract enforceability on cross-border bank flows.

financial system. Likewise Panel B reports estimates excluding all capital flow observations involving U.S., Japan or Germany (G3). In Panel C, I ignore all intra-G7 transactions. In Panels D and E I vary the sample period. Instead of using data from all available years, I split the sample into two equally-spaced parts before and after the early nineties. This twist is interesting since many economies have only recently lifted capital account restrictions. In addition the volume of cross-border capital flows has drastically increased in the late nineties. In Panel F, I exclude from the specification the time nuisance parameters ($a_t$).

The coefficients on both the political risk-composite institutional rating and the specific institutional variables are not particularly sensitive neither to the sample nor the exact specification. "Political risk", for example, enters with a coefficient which is in all versions close to 0.05 and at least two standard deviations above zero. When the "political risk" enters jointly with the specific institutional variables, its coefficient decays, but retains both its statistical and economic significance. Of the four specific institutional variables ($Corruption_j$, $Contract_j$, $Anti\_direct_j$, $Gov\_Own_j$), government ownership of banks and contract enforceability appear to be the most important. Both have coefficients that are statistically different than zero in all permutations. Moreover the range of the estimated coefficients for $Contract_j$ and $Gov\_Own_j$ is relatively narrow implying that a poorly performing and misfunctioning legal system as well as a state-owned banking system strongly impede foreign capital. Corruption and low *de jure* investor's protection also influence foreign banks, but to lesser extent.

# 8 Conclusion

Few doubt that institutions to a smaller or greater extent influence financial and economic development. The challenge for empirical research is to quantify which type and through which channels institutions impact economic activity. This paper studies the determinants of gross international bank flows in a large panel of countries and years. Besides identifying the driving forces of international banking, this paper provides the first comprehensive analysis of the role of politics and institutions on cross-border capital movements.

The results are straightforward. First, conditioning on "gravity" factors ("size" and distance), countries with high-quality institutions and low political risk engage more in asset trade. Second, foreign banks prefer to allocate credit to uncorrupted countries with well-

functioning legal systems. Government ownership of banks amplifies agency costs and is associated with lower levels of international bank lending. Third, financial securities' and banking law harmonization policies that European countries have implemented together with minimizing of exchange rate risk, have spurred cross-border bank lending activities within the European Union. The results also reveal that foreign banks are especially concerned with political, rather than other risk factors.

These results are robust to a variety of sensitivity checks including: Controlling for omitted variables; addressing problems of the BIS dataset; dealing with measurement error and the potential endogeneity of the institutional ratings; checking the empirical model's stability to different country samples and time-horizons, and more. Most importantly, the panel regressions yield significant coefficients on both the political risk rating and the specific institutional indicators, even when these variables are jointly entered in the specification. The results also hold when one controls for "economic" or "financial" risk. The panel evidence thus suggest that political stability, actual (*de facto*) legal system quality and state involvement in the banking sector are not only key determinants in the investment strategy of international banks, but play somewhat independent roles.

The dataset on bilateral banking activities covers a sizable amount of the overall volume of gross international capital movements, and includes not only inter-bank loans, but also significant amounts of portfolio and direct investment flows. Consequently the empirical results have a more general interpretation.

First from a theoretical standpoint the evidence supports Shleifer and Wolfenzon's (2002) model, that stresses the importance of an efficient legal system for financial development. The results also offer a plausible explanation to the Lucas (1990) famous inquiry on "*why capital doesn't flow from rich to poor nations*" and the associated "*home-bias puzzle*". Part of the answer is in poor nations' political instability, corruption, inefficient government policies and low-quality law.

Second, from a policy perspective the evidence implies that improving inefficient bureaucracies, tackling corruption, and enhancing legal system competence are crucial for attracting foreign bank capital. The "fixed-effect" estimates that control for time-invariant omitted variables and exploit the "*within*" country variation also suggest that political liberalizations, privatization and other structural policies (which are followed by a decline in political risk), can enhance domestic liquidity by attracting substantially more foreign capital. This applies to both developing and industrialized countries.

Third, the results call for additional research. New empirical work has to assess how politics and institutions affect other types of capital flows. Theory on international capital movements needs to model explicitly the mechanisms through which institutions influence investors' decisions. Although it is unlikely that institutions alone can explain the large equity home-bias and the low levels of international diversification, institutional performance and politics should be a necessary ingredient for any serious theoretical and empirical effort to analyze cross-border capital movements.

# Appendix A - Country sample

**Source-Reporting countries (19)**:

Austria (AUT)$^{h,eu}$, Belgium (BEL)$^{h,eu}$, Denmark (DNK)$^{h,eu}$, Finland (FIN)$^{h,eu}$, France (FRA)$^{h,eu}$, Germany (DEU)$^{h,eu}$, Ireland (IRL)$^{h,eu}$, Italy (ITA)$^{h,eu}$, Netherlands (NLD)$^{h,eu}$, Norway (NOR)$^{h}$, Portugal (start 1997 q4) (PRT)$^{h,eu}$, Spain (ESP)$^{h,eu}$, Sweden (SWE)$^{h,eu}$, Switzerland (CHE)$^{h}$, United Kingdom (GBR)$^{h,eu}$, United States (USA)$^{h}$, Japan (JPN)$^{h}$, Canada (CAN)$^{h}$, Australia (AUS)$^{h}$.

**Recipient (vis-a-vis) countries (51)**:

Argentina (ARG), Australia (AUS)$^{h}$, Austria (AUT)$^{h,eu}$, Belgium (BEL)$^{h,eu}$, Bulgaria (BGR), Brazil (BRA), Botswana (BWA), Canada (CAN)$^{h}$, Switzerland (CHE)$^{h}$, Chile (CHL), China (CHN), Colombia (COL), Costa Rica (CRI), Czech Republic (CZE), Germany (DEU)$^{h,eu}$, Denmark (DNK)$^{h,eu}$, Ecuador (ECU), Spain (ESP)$^{h,eu}$, Estonia (EST), Finland (FIN)$^{h,eu}$, France (FRA)$^{h,eu}$, United Kingdom (GBR)$^{h,eu}$, Croatia (HRV), Hungary (HUN), Indonesia (IDN), Ireland (IRL)$^{h,eu}$, Israel (ISR), Italy (ITA)$^{h,eu}$, Jordan (JOR), Japan (JPN)$^{h}$, Korea, Republic of (KOR), Lithuania (LTU), Latvia (LVA), Mexico (MEX), Malaysia (MYS), Namibia (NAM), Netherlands (NLD)$^{h,eu}$, Norway (NOR)$^{h}$, New Zealand (NZL)$^{h}$, Peru (PER), Philippines (PHL), Poland (POL), Portugal (PRT)$^{h,eu}$, Romania (ROM), Slovak Republic (SVK)$^{h}$, Slovenia (SVN), Sweden (SWE)$^{h,eu}$, Tunisia (TUN), Turkey (TUR), United States (USA)$^{h}$, South Africa (ZAF).

**Note:** *h* indicates "High-Income" countries (as classified by the World Bank); *eu* indicates European Union 15 member (before the 2004 Enlargement).

# Appendix B - Variable Definitions and Sources

## Panel A: Bank flows data

Bank flow data are retrieved form the Bank of International Settlement's (BIS) Locational Banking Statistics. The Locational Banking Statistics in the oldest BIS data-source and it now covers data from banks located in 36 "reporting area" jurisdictions.

However, 17 "source" countries were excluded from the present study due to limited data availability. Specifically the following countries were excluded (year of first available observation in parenthesis): India (start 2001), Guernsey (start 2001), Isle of Man (start 2001), Taiwan (start 2000), Chile (start 2002), Bermuda (start 2002), Brazil (start 2002), Turkey (start 2000), Jersey (start 2001), Panama (start 2002) were excluded because these countries monetary authorities started reporting bank's assets and liabilities in the BIS after 2000. Singapore was excluded because the reported data is not comparable with the other statistics. The off-shore centers, namely the Bahamas, Bahrain, Cayman Islands, the Netherlands Antilles, Hong Kong and Luxembourg were excluded due to data unavailability for GDP and other macroeconomic variables at a quarterly basis (from IMF's International Financial Statistics). Moreover data from off-shores have many gaps and for some countries are not reported at a quarterly basis. For most "reporting area" countries data cover more than 90% of the international assets and liabilities of all banking institutions operating within their jurisdictions.

Assets and liabilities represent exposure both to non-residents in "vis-a-vis" countries as well as exposure to domestic residents in foreign country. Assets include almost all on balance-sheet items (plus some off-balance sheet items in the area of trustee business). Assets include mainly deposits and balances placed with non-resident banks, including bank's own related offices, and loans and advances to banks and non-banks. They also include holdings of securities and participations (i.e. permanent holdings of financial interest in other undertakings) in non-resident entities. Data also include trade-related credit, arrears of interest and principal that have not been written down and holdings of bank's own issues of international securities. They also "cover portfolio and direct investment flows of financial interest in enterprises" (BIS, 2003a).

Banks contributing to the BIS statistical database report only stocks. The BIS estimates flows by the change of stocks, adjusted by exchange rate changes (which is feasible, since

individual banks also report the currency of international assets and liabilities) and other differences in valuation. This adjustment is clearly not perfect, since flows might have occurred at different exchange rates (see Wooldridge, 2002). However this is a typical problem of most capital flows data and is by far preferable to a manual adjustment (e.g. Van Rijckeghem and Weder, 2003).

[Source: Locational Banking Statistics, Bank of International Settlements; Fall 2003 (includes both public and not-yet publicly available data)].

- **Aggregate asset bank flows:** Change of international financial claims of bank offices resident in the "reporting area" ("source" country) to all sectors in "vis-a-vis" countries ("recipient" country).
- **Inter-bank capital flows:** Change of international financial claims of bank offices resident in the "reporting area" only to banking institutions in vis-a-vis" countries ("recipient" country).
- **Aggregate liability bank flows:** Change of international financial liabilities of bank offices resident in the "reporting area" only to banking institutions in vis-a-vis" countries ("recipient" country).

### Panel B: Risk characteristics data

The International Country Risk Guide (ICRG) rating comprises 22 variables in three subcategories of risk: political, financial, and economic. It is produced by Political Risk Services (PRS) on a monthly basis from 1983. The ICRG staff collects political information and financial and economic data, converting these into risk points for each individual risk component on the basis of a consistent pattern of evaluation. The political risk assessments are made on the basis of subjective analysis of the available information, while the financial and economic risk assessments are made solely on the basis of objective data. After a risk assessment (rating) has been awarded to each of the 22 risk components, the components within each category of risk are added together to provide a risk rating for each risk category (Political, Financial, or Economic).

- **Political Risk:** The Political Risk index is based on 100 points, ranging from 0 denoting minimum level of institutional quality to 100 indicating a total absence of political

risk. The PRS suggest that "*...the aim of the political risk rating is to provide a means of assessing the political stability of the countries covered by ICRG on a comparable basis.*" The Political Risk Rating includes 12 variables covering both political and social attributes (components and weights). (1) : Government Stability, which includes government Unity, legislative strength, an popular support (16%). (2) : Socioeconomic Conditions, which include unemployment, consumer confidence, and poverty (16%). (3) : Investment Profile, which includes assessment in contract viability/expropriation, profits repatriation, and payment delays (16%). (4) : Internal Conflict, which includes civil war, terrorism/political violence, and civil disorder (16%). (5) : External Conflict, which includes war, cross-border conflict, and foreign pressures (16%). (6) : Corruption (8%). (7) : Military in Politics (8%). (8) : Religion in politics (8%). (9) : Law and Order (8%). (10) : Ethnic Tensions (8%). (11) : Democratic Accountability (8%). (12) : Bureaucracy Quality (4%).

- **Economic Risk:** The Economic Risk index is based on 50 points, ranging from 0 denoting the highest possible risk level to 50 indicating an elimination of economic risk. The variable is rescaled to a $0-100$ range. Its purpose according is "*.... to provide a means of assessing a country's current economic strengths and weaknesses.*" (PRS) The Economic Risk Rating includes 5 weighted variables covering macroeconomic developments. (components and weights): (1) : GDP per Head of Population (10%). (2) : Real Annual GDP Growth (20%). (3) : Annual Inflation Rate (20%). (4) : Budget Balance as a Percentage of GDP (20%). (5) : Current Account Balance as a Percentage of GDP (30%)

- **Financial Risk:** The Financial Risk ranges from 0 denoting the highest possible risk level to 50 indicating an elimination of financial risk. For comparability, the variable is rescaled to a $0-100$ range. As the PRS write "*..The overall aim of the Financial Risk Rating is to provide a means of assessing a country's ability to pay its way. In essence this requires a system of measuring a country's ability to finance its official, commercial, and trade debt obligations.*" The Financial Risk Rating includes 5 weighted variables covering financial and monetary sector developments (components and weights). (1) :Foreign Debt as a Percentage of GDP (20%). (2) : Foreign Debt Service as a Percentage of Exports of Goods and Services (20%). (3) : Current Account as a Percentage of Exports of Goods and Services (30%). (4) : Net Liquidity as Months of Import Cover (10%). (5) : Exchange Rate Stability (20%).

## C: Other

- $Rate_{j,t}$– **Lending rate:** Lending rate is the bank rate that usually meets the short and medium term financing needs of the private sector. [Source: IMF IFS line 60P]
- $Inf_{j,t}$– **Inflation Rate:** Calculated as the change in CPI. [Source: IMF IFS line 64]
- $\ln(Y)$– **Log real GDP per capita:** Logarithm of GDP per capita volume, converted to US dollars and adjusted with local CPI.[Source: IMF IFS 99B]
- $\ln(Area)$– **Log Area:** Natural logarithm of land area in square kilometers.[Source: Rose(2002) originally from Gallup, Mellinger and Sachs]
- $Pop$– **Population:** Values correspond to mid-year estimates. A linear interpolation is used to fill in missing observations. At the regressions the variable is entered as the natural logarithm of the interpolated series [Source: IMF IFS line 99Z].
- $Tie_{i,j}$– **Ethnolinguistic Tie:** Dummy variable that equals one if the two countries share a common language or have former colonial relation.[Source: Glick and Rose (2002), originally from CIA Factbook]
- $\ln(Dist_{i,j})$– **Distance:** Natural logarithm of greater circle distance between economic centres (usual, but not always capital cities) in a pair of countries.[Source: Andrew Rose (2004)]
- $Anti\_direct_j$– **Anti-director rights index:** An index aggregating shareholder rights. The index is formed by adding 1 when: (1) the country allows shareholders to mail their proxy vote to the firm; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities in the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to 10 percent (the sample median); or ,(6) shareholders have preemptive rights that can only be waved by a shareholders' vote. The index ranges from 0 to 6.[Source: La Porta et al. (1998)]
- $Gov\_own_j$– **Government Ownership of Commercial Banks:** Share of the assets of the top 10 banks, excluding development banks, in a given country controlled

by the government at the 20 percent level in 1995. A bank is controlled by the government if government banking is larger than 20 percent and the state is the largest shareholder.[Source: La Porta et al. (2002)]

- $Overhead_j$– **Bank Overhead Costs:** The accounting value of a bank's overhead costs as a share of its total assets. The data is obtained from individual bank's balance sheets. The measure refers to 1995. [Source: La Porta et al. (2002)]

- $Bank\_Sound_j$– **Bank Soundness Measure:** An index assessing the soundness of banks in terms of their "general health and sound balance sheets." The index ranges from 1 to 7, where higher scores indicate stronger agreement with the statement. The score refers to the index in 1999. [Source: La Porta et al. (2002); originally from the World Economic Forum]

- $Corruption_j$– **Corruption:** A composite index for the year 2000 that draws on 14 data sources from seven institutions: the World Economic Forum, the World Business Environment Survey of the World Bank, the Institute of Management Development, Pricewaterhouse Coopers, the Political and Economic Risk Consultancy, the Economist Intelligence Unit and Freedom House's Nations in Transit. The score ranges between 0 and 10 with lower values indicating higher levels of corruption. [Source: Djankov et al (2003)]

- $Contract_j$– **Contract Enforceability:** "The relative degree to which contractual agreements are honoured and complications presented by language and mentality differences. Scale: $0-10$ (higher scores indicating higher degree of enforceability) [Source: Djankov et al (2003), originally from Business Environmental Risk Intelligence]

- $Legal\_time_j$– **Legal Time:** Estimated duration, in calendar days, between the plaintiff files the complaint till the time the landlord repossess the property. [Source: Djankov et al (2003)]

- $Schooling_{j,t}$– **Schooling:** Average years of schooling in the population aged 25 and above. The data are reported in five-year averages. [Source: Barro and Lee (2001)]

- $Life\_\exp ect_{j,t}$– **Life Expectancy:** Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. The data has some arbitrary gaps.

A linear interpolation is used to fill in these gaps. At the regressions the variable is entered as the natural logarithm of the interpolated series. [Source: World Bank World Development Indicators CD-ROM (2004 Edition)].

- $ER\_reg1-$ **"Fine" Exchange Rate Regime:** Fine classification of exchange rate arrangements. Ranges from 1, indicating a "fixed" exchange rate regime to 15, suggesting a freely floating exchange rate. Specifically the variable takes on the following values:(1)=No separate legal tender; (2)=Pre announced peg or currency board arrangement; 3=Pre announced horizontal band that is narrower than or equal to $+/-2\%$; (4)=De facto peg; (5)=Pre announced crawling peg; (6)=Pre announced crawling band that is narrower than or equal to $+/-2\%$; (7)=De factor crawling peg; (8)=De facto crawling band that is narrower than or equal to $+/-2\%$; (9)=Pre announced crawling band that is wider than or equal to $+/-2\%$; (10)= De facto crawling band that is narrower than or equal to $+/-5\%$; (11)=Moving band that is narrower than or equal to $+/-2\%$ (i.e., allows for both appreciation and depreciation over time); (12)=Managed floating; (13)=Freely floating; (14)=Freely falling; (15)=Dual market in which parallel market data is missing. [Source: Reinhart and Rogoff (2004)]

- $ER\_reg2-$ **"Coarse" Exchange Rate Regime:** Coarse classification of exchange rate arrangements. Ranges from 1, indicating a "fixed" exchange rate regime to 5, suggesting a freely floating exchange rate. Specifically the variable takes on the following values: (1): No separate legal tender, or pre announced peg or currency board arrangement, or pre announced horizontal band that is narrower than or equal to $+/-2\%$, or de facto peg; (2): Pre announced crawling peg, or pre announced crawling band that is narrower than or equal to $+/-2\%$ or De factor crawling peg, or de facto crawling band that is narrower than or equal to $+/-2\%$. (3): Pre announced crawling band that is wider than or equal to $+/-2\%$,or de facto crawling band that is narrower than or equal to $+/-5\%$, or moving band that is narrower than or equal to $+/-2\%$, or managed floating. (4): Freely floating. (5): Freely falling. (6): Dual market in which parallel market data is missing. [Source: Reinhart and Rogoff (2004)]

## D: Instruments

- **Latitude:** The absolute value of the geographical latitude of the country. Source: La Porta et al. (1999); originally from CIA Factbook]
- **Religious, Ethnic & Linguistic Fragmentation:** Indicators of religious, ethnic and linguistic heterogeneity. Constructed as one minus the Herfindahl index of the share of the largest religious, ethnical, and linguistic groups. It reflects the probability that two randomly selected individuals follow different religious beliefs, belong to different ethnical groups, or do not speak the same language. [Source: Alesina et al. (2003)]
- **Legal Origin:** Identifies the legal origin of the Company Law or Commercial Code of each country. There are five categories: (1) Common law; (2) French civil law; (3) German civil law; (4) Scandinavian civil law; (5) Socialist/Communist law. [Source: La Porta et al. (1998, 1999)]

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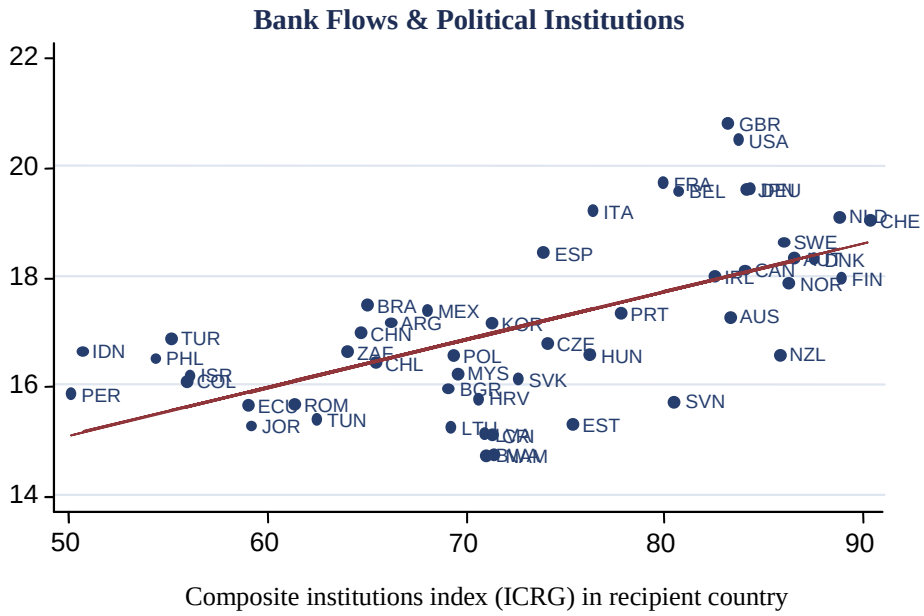
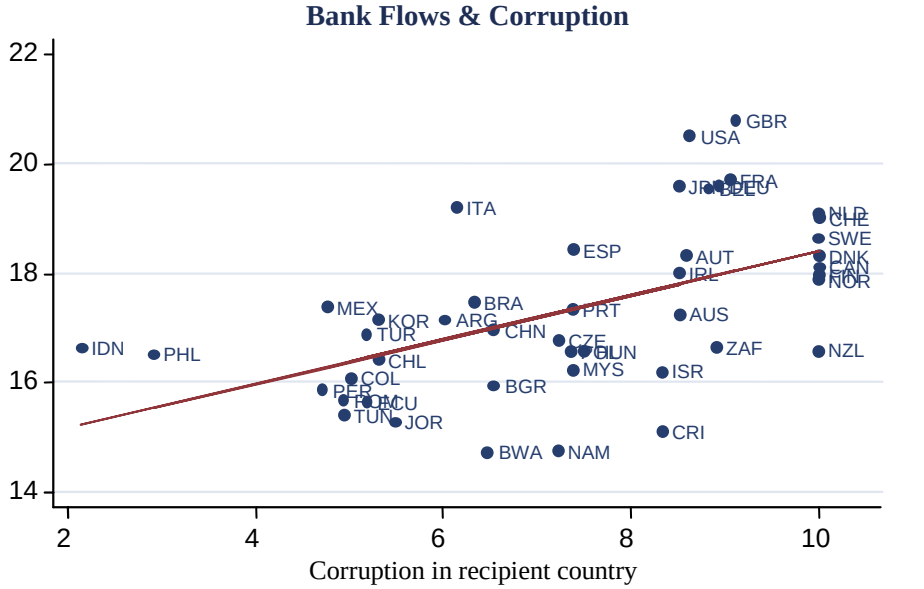
**Figure 1**



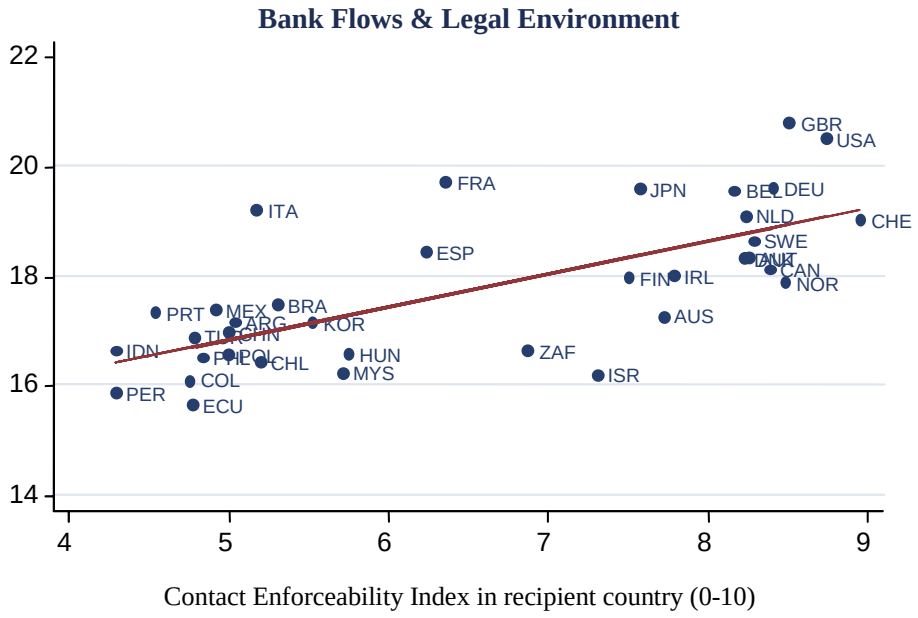

*Notes:* Figure 1 plot the cross-time mean of the natural logarithm of international bank flows (vertical axis) against the mean value of the aggregate institutions index "ICRG political risk" measure in the "recipient" country (horizontal axis). The dashed line gives a linear regression fit. For detailed variable definitions, sources, and country abbreviations see Appendix A and B.

**Figure 2**



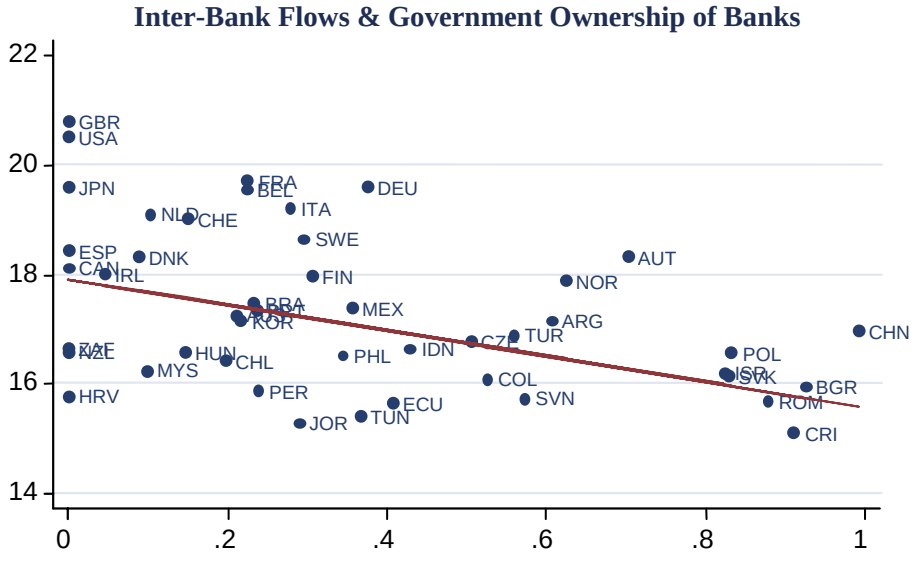

*Notes:* Figure 2 plots the cross-time mean of the natural logarithm of international bank flows (vertical axis) against corruption in the "recipient" country (horizontal axis). A higher value in the 0—10 corruption index implies lower levels of corruption. The dashed line gives a linear regression fit. For detailed variable definitions, sources, and country abbreviations see Appendix A and B.

**Figure 3**




*Notes:* Figure3 p1ots the cross-time mean of the natural logarithm of cross-border bank flows (vertical axis) against contract enforceability in the recipient country (horizontal axis). A higher value in the 0 to 10 index implies higher quality legal system. The dashed line gives a linear regression fit. For detailed variable definitions, sources, and country abbreviations see Appendix A and B.

**Figure 4**




*Notes:* Figure 4 p1ots the cross-time mean of the natural logarithm of cross-border inter-bank bank flows (vertical axis) against government ownership of commercial banks in the recipient country (horizontal axis). The dashed line gives a linear regression fit. For detailed variable definitions, sources, and country abbreviations see Appendix A and B.

**Table 1**
**Summary Statistics**

| Variable | Mean | Std. Dev. | Min | Max | Observations | Number of panels |
|---|---|---|---|---|---|---|
| **Gravity Variables and Bank Flows** | | | | | | |
| Logarithm of gross asset flows | 17.49 | 2.27 | 13.82 | 24.99 | 50830 | 903 |
| Logarithm of gross inter-bank asset flows | 17.35 | 2.30 | 13.82 | 24.89 | 47825 | 856 |
| Logarithm of gross liability flows | 17.56 | 2.27 | 13.82 | 24.93 | 51443 | 907 |
| Logarithm distance -- *[ln Disti,j]* | 7.79 | 1.07 | 4.80 | 9.42 | 72200 | 950 |
| Real per capita GDP in "source" country -- *[Yi,t]* | 9654.38 | 8494.77 | 12.16 | 46515.76 | 69000 | 950 |
| Real per capita GDP in "recipient" country -- *[Yj,t]* | 9101.84 | 8107.29 | 0.01 | 36481.79 | 50224 | 931 |
| Population (in millions) in "source" country -- *[Popi,t]* | 41.64 | 59.76 | 3.50 | 284.80 | 17100 | 950 |
| Population (in millions) in "recipient" country -- *[Popj,t]* | 60.06 | 173.33 | 1.05 | 1284.97 | 16093 | 950 |
| Logarithm of land area in "source" country -- *[ln Areai]* | 12.57 | 1.77 | 10.35 | 16.08 | 72200 | 950 |
| Logarithm of land area in "recipient" country -- *[ln Areaj]* | 12.53 | 1.67 | 9.93 | 16.08 | 72200 | 950 |
| Lending Rate in "source" Country -- *[Ratei,t]* | 9.58 | 4.24 | 1.85 | 30.00 | 67950 | 950 |
| Inflation rate in "recipient" country -- *[Infj,t]* | 78.41 | 655.47 | -92.58 | 18296.40 | 66063 | 950 |
| **Institutions, Risk and Other Characteristics in Recipient Country** | | | | | | |
| ICRG Political Risk -- [*Instj,t-1]* | 72.49 | 13.24 | 33.00 | 97.00 | 64429 | 950 |
| ICRG Economic Risk -- *[Economic_Riskj,t]* | 71.38 | 12.18 | 21.00 | 99.00 | 64429 | 950 |
| ICRG Financial Risk -- *[Financial_Riskj,t]* | 74.78 | 16.58 | 16.00 | 100.00 | 64429 | 950 |
| Corruption -- *[Corruptionj]* | 7.28 | 2.02 | 2.14 | 10.00 | 63536 | 836 |
| Antidirector's Rights -- *[Anti_directj]* | 2.97 | 1.32 | 0.00 | 5.00 | 72200 | 646 |
| Contract Enforceability -- *[Contractj]* | 6.49 | 1.57 | 4.29 | 8.94 | 50540 | 665 |
| Legal Time -- [*Legal_timej* ] | 267.42 | 217.32 | 33.00 | 1080.00 | 70756 | 931 |
| Governmnet Ownership of Banks -- *[Gov_Ownj]* | 0.41 | 0.32 | 0.00 | 1.00 | 64980 | 855 |
| Bank overhead costs -- *[Overheadj]* | 0.04 | 0.03 | 0.00 | 0.13 | 72200 | 950 |
| Bank soundness measure -- *[Bank_Soundj]* | 4.67 | 1.48 | 1.74 | 6.66 | 59204 | 779 |
| Schooling -- *[Schoolingj,t]* | 7.75 | 2.35 | 2.48 | 12.25 | 53040 | 780 |
| Life Excpectancy -- *[Life_expectj,t]* | 72.61 | 5.85 | 38.10 | 81.56 | 46808 | 950 |
| Exchange Rate Regime -- [*ER_reg1j,t]* | 8.81 | 3.93 | 1.00 | 15.00 | 62320 | 931 |

Notes: Table 1 reports the descriptive statistics and the abbreviations of all variables employed in the paper. Columns 1 to 4 report the panel mean, standard deviation the minimum and maximum value respectively. The last two columns give the total number of observations and the number of country pairs (panels). For precise variable definitions and sources see Appendix B.

**Table 2**
**Pairwise Correlation Matrix**

Panel A - Bank Flows, Gravity Factors, & Risk Characteristics

| | Gross Asset flows | Inter-bank flows | Log Liability flows | ln Disti,j | Tiei,j | ln Yi,t | ln Yj,t | Popi,t | Popj,t | Political Riskj,t | Economic Riskj,t | Financial Riskj,t |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Logarithm of Gross Asset flows | 1.00 | | | | | | | | | | | |
| Logarithm of Gross Inter-bank flows | 0.89 | 1.00 | | | | | | | | | | |
| Logarithm of Gross Liability flows | 0.69 | 0.68 | 1.00 | | | | | | | | | |
| Log Distance | -0.24 | -0.27 | -0.28 | 1.00 | | | | | | | | |
| Ethnolinguistic Ties | 0.14 | 0.14 | 0.12 | 0.05 | 1.00 | | | | | | | |
| Logarithm of GDP p.c. in "source" | 0.09 | 0.08 | 0.09 | 0.24 | 0.11 | 1.00 | | | | | | |
| Logarithm of GDP p.c. in "recipient" | 0.35 | 0.36 | 0.30 | -0.09 | 0.10 | -0.01 | 1.00 | | | | | |
| Log Population in "source" | 0.26 | 0.24 | 0.25 | 0.17 | 0.04 | 0.31 | -0.01 | 1.00 | | | | |
| Log Population in "recipient" | 0.21 | 0.18 | 0.21 | 0.22 | -0.04 | 0.00 | 0.15 | -0.02 | 1.00 | | | |
| Political Risk (institutions) in "recipient" | 0.41 | 0.43 | 0.37 | -0.31 | 0.07 | -0.01 | 0.41 | 0.01 | -0.19 | 1.00 | | |
| Financial Risk in "recipient" | 0.38 | 0.39 | 0.37 | -0.24 | 0.08 | 0.01 | 0.40 | 0.00 | -0.02 | 0.73 | 1.00 | |
| Economic Risk in "recipient" | 0.35 | 0.37 | 0.35 | -0.20 | 0.12 | 0.01 | 0.37 | 0.01 | -0.15 | 0.65 | 0.70 | 1.00 |

Panel B - Risk Characteristics & Institutional Performance in Recipient Country

| | Political Risk | Financial Risk | Economic Risk | Corruption | Anti-direct | Contract Enforce | Gov. Own. | Overhead | Bank Sound | Schooling | Life Expect | ER_reg1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Political Risk (composite institutions) | 1.00 | | | | | | | | | | | |
| Financial Risk | 0.73 | 1.00 | | | | | | | | | | |
| Economic Risk | 0.65 | 0.70 | 1.00 | | | | | | | | | |
| Corruption | 0.74 | 0.56 | 0.51 | 1.00 | | | | | | | | |
| Anti-director's rights | 0.09 | 0.06 | 0.03 | 0.24 | 1.00 | | | | | | | |
| Contract Enforceability Index | 0.72 | 0.62 | 0.59 | 0.87 | 0.14 | 1.00 | | | | | | |
| Governmnet Ownership of Banks | -0.30 | -0.34 | -0.35 | -0.31 | -0.33 | -0.35 | 1.00 | | | | | |
| Bank overhead costs | -0.41 | -0.43 | -0.52 | -0.40 | -0.11 | -0.49 | 0.28 | 1.00 | | | | |
| Bank soundness measure | 0.47 | 0.35 | 0.36 | 0.67 | 0.26 | 0.70 | -0.44 | -0.29 | 1.00 | | | |
| Schooling | 0.60 | 0.49 | 0.35 | 0.64 | 0.31 | 0.76 | -0.23 | -0.32 | 0.49 | 1.00 | | |
| Life Expectancy | 0.53 | 0.43 | 0.36 | 0.51 | 0.00 | 0.59 | -0.26 | -0.35 | 0.39 | 0.53 | 1.00 | |
| Exchange Rate Regime 1 | -0.22 | -0.23 | -0.36 | -0.10 | 0.31 | -0.07 | 0.07 | 0.05 | -0.14 | 0.06 | -0.13 | 1.00 |

**Table 3**
**Benchmark Regression Estimates**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| ln $Y_{i,t}$ | 0.3286[a] | 0.2924[a] | 0.1851[a] | 0.1852[a] | 0.1860[a] | 0.0915[c] |
| | (5.12) | (5.33) | (3.45) | (3.45) | (3.75) | (1.73) |
| ln $Y_{j,t}$ | 0.3932[a] | 0.2289[a] | 0.2314[a] | 0.2326[a] | 0.1278[a] | 0.1171[a] |
| | (11.01) | (7.86) | (7.57) | (7.51) | (6.71) | (6.03) |
| ln $Pop_{i,t}$ | 0.8631[a] | 0.8789[a] | 0.8633[a] | 0.8633[a] | 0.8774[a] | 0.7069[a] |
| | (20.48) | (24.15) | (23.90) | (23.90) | (25.15) | (21.60) |
| ln $Pop_{j,t}$ | 0.7172[a] | 0.8292[a] | 0.8398[a] | 0.8384[a] | 0.7841[a] | 0.7459[a] |
| | (16.25) | (20.72) | (20.50) | (20.43) | (18.30) | (21.26) |
| ln $Area_i$ | -0.2761[a] | -0.3094[a] | -0.2718[a] | -0.2717[a] | -0.2754[a] | — |
| | (8.15) | (11.03) | (9.72) | (9.71) | (10.34) | |
| ln $Area_j$ | -0.0699[c] | -0.0957[a] | -0.0916[a] | -0.0906[a] | -0.0328 | — |
| | (1.88) | (2.92) | (2.75) | (2.72) | (0.91) | |
| ln $Dist_{i,j}$ | -0.8145[a] | -0.6476[a] | -0.6558[a] | -0.6563[a] | -0.7063[a] | -0.7811[a] |
| | (17.28) | (15.13) | (14.58) | (14.59) | (14.43) | (17.49) |
| $Tie_{i,j}$ | 0.6126[a] | 0.5939[a] | 0.6075[a] | 0.6060[a] | 0.4493[a] | 0.3324[a] |
| | (5.23) | (5.66) | (5.87) | (5.86) | (4.37) | (3.03) |
| $Rate_{i,t}$ | | | -0.0683[a] | -0.0683[a] | -0.0703[a] | — |
| | | | (5.36) | (5.36) | (5.90) | |
| $Inf_{j,t}$ | | | | -0.0001 | -0.00001 | — |
| | | | | (1.32) | (0.17) | |
| $Inst_{j,t-1}$ | | 0.0569[a] | 0.0581[a] | 0.0576[a] | | |
| | | (16.34) | (16.22) | (15.71) | | |
| ln $Inst_{j,t-1}$ | | | | | 1.9851[a] | 1.8611[a] |
| | | | | | (8.80) | (8.35) |
| Adj. $R^2$ | 0.4610 | 0.5172 | 0.5216 | 0.5228 | 0.5740 | 0.5487 |
| Observations | 38688 | 37871 | 35232 | 35232 | 35232 | 37871 |
| Country-pairs | 863 | 859 | 855 | 855 | 855 | 859 |
| Regional & Income Dummies | No | No | No | No | Yes | Yes |

*Notes:* The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). The specifications in columns (5) and (6) include regional and income dummies at the recipient country (coefficients not reported). The classification is taken from the World Bank. For variable definitions and sources see Appendix B.

**Table 4**
**Alternative Panel Methodologies**

| | Between | Within | Random Effects | Semi-Fixed ("source") | Semi-Fixed ("recipient") | Double-Fixed | Prais-Winsten | Random effects autocorr. (ar1) | FGLS autocorr. |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| ln $Y_{i,t}$ | 0.2132[a] | 0.0716[a] | 0.1222[a] | 0.0654 | 0.1791[a] | 0.0548 | 0.1768[a] | 0.1186[a] | 0.1748[a] |
| | (3.66) | (2.68) | (5.35) | (1.50) | (4.31) | (1.39) | (3.71) | (4.73) | (12.29) |
| ln $Y_{j,t}$ | 0.2150[a] | 0.0054 | 0.1122[a] | 0.2606[a] | 0.0093 | 0.0089 | 0.2432[a] | 0.1384[a] | 0.3085[a] |
| | (7.49) | (0.59) | (13.91) | (8.39) | (0.55) | (0.53) | (8.02) | (14.85) | (38.42) |
| ln $Pop_{i,t}$ | 0.7353[a] | 1.1370[a] | 0.8318[a] | 2.5067[a] | 0.8852[a] | 2.1040[a] | 0.8856[a] | 0.8363[a] | 0.8870[a] |
| | (18.29) | (4.31) | (24.03) | (3.74) | (30.88) | (4.03) | (23.56) | (24.30) | (86.00) |
| ln $Pop_{j,t}$ | 0.8093[a] | -1.7561[a] | 0.6998[a] | 0.8201[a] | -1.8630[a] | -1.7747[a] | 0.8251[a] | 0.7384[a] | 0.7954[a] |
| | (17.94) | (9.78) | (19.13) | (23.03) | (4.08) | (3.98) | (19.66) | (20.2) | (74.32) |
| ln $Area_i$ | -0.2090[a] | — | -0.2001[a] | — | -0.2903[a] | — | -0.2655[a] | -0.2051[a] | -0.2797[a] |
| | (6.18) | | (7.43) | | (13.30) | | (8.97) | (7.64) | (33.41) |
| ln $Area_j$ | -0.0455 | — | 0.1001[a] | -0.0963[a] | — | — | -0.0684[b] | 0.0670[b] | -0.0807[a] |
| | (1.23) | | (3.05) | (3.31) | | | (1.97) | (2.14) | (9.03) |
| ln $Dist_{ij}$ | -0.6903[a] | — | -0.8718[a] | -0.6631[a] | -0.6616[a] | -0.6306[a] | -0.7138[a] | -0.8519[a] | -0.7035[a] |
| | (14.32) | | (21.5) | (16.34) | (13.64) | (14.37) | (15.34) | (21.12) | (57.34) |
| $Tie_{i,j}$ | 0.5691[a] | — | 1.0426[a] | 0.3931[a] | 0.4259[a] | 0.1516[c] | 0.6501[a] | 1.0118[a] | 0.5685[a] |
| | (4.93) | | (9.55) | (4.09) | (4.48) | (1.86) | (6.04) | (9.37) | (19.18) |
| $Rate_{i,t}$ | -0.0826[a] | -0.0092[b] | 0.0041 | -0.0025 | -0.0702[a] | -0.0013[a] | -0.0667[a] | 0.0021 | -0.0604[a] |
| | (3.48) | (2.02) | (1.03) | (0.22) | (7.26) | (7.26) | (5.49) | (0.42) | (13.73) |
| $Inf_{j,t}$ | 0.0002 | 0.00001 | -0.0001 | -0.0001 | 0.0001 | 0.0003 | -0.0001 | -0.0001 | -0.0001[c] |
| | (0.36) | (0.80) | (1.05) | (1.58) | (1.01) | (0.98) | (0.24) | (0.96) | (1.81) |
| ln $Inst_{j,t-1}$ | 4.0712[a] | 0.3656[a] | 0.6354[a] | 3.5661[a] | 0.3315[b] | 0.3431[b] | 3.39[a] | 0.8375[a] | 2.8652[a] |
| | (11.5) | (4.36) | (8.16) | (16.26) | (1.98) | (2.13) | (15.15) | (9.08) | (37.73) |
| Adj. $R^2$ | 0.7705 | 0.1138 | 0.5368 | 0.5556 | 0.6266 | 0.6751 | 0.5089 | 0.5626 | |
| Observations | 35232 | 35232 | 35232 | 35232 | 35232 | 35232 | 35232 | 35232 | 35225 |
| Country-pairs | 855 | 855 | 855 | 855 | 855 | 855 | 855 | 855 | 848 |
| Auto-corr. Coeff | — | — | — | — | — | — | 0.54 | 0.22 | panel-specific |

*Notes:* The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter t. Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. All specifications include period (quarter) fixed effects (intercepts not reported). Columns 1, 2, and 3 report the "between", "within" and random effects (GLS) estimates respectively. $R^2$ is the "within"-$R^2$ for the fixed effect and the overall $R^2$ for random effects. The estimations in columns (4) and (5) include "source" and "recipient" country dummies respectively. The specification reported in column (6) includes both "source" and recipient" country dummies. Columns (7)—(9) control for residual auto-correlation. The last row gives the estimated autocorrelation coefficient. Column (6) reports the Prais-Winsten estimator, column (7) random effect GLS that allow for autocorrelation and column (8) gives feasible GLS estimates that allow for panel-specific residual correlation. For variable definitions and sources see Appendix B.

**Table 5**
**Specific Institutional Characteristics**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| ln $Y_{i,t}$ | 0.1896[a] | 0.1792[a] | 0.1896[a] | 0.2435[a] | 0.2197[a] | 0.2380[a] | 0.1985[a] |
| | (3.41) | (3.35) | (3.50) | (4.09) | (4.03) | (4.08) | (3.69) |
| ln $Y_{j,t}$ | 0.1689[a] | 0.1504[a] | 0.1334[a] | 0.1381[a] | 0.0979[a] | 0.1162[a] | 0.1480[a] |
| | (6.26) | (5.84) | (5.13) | (6.49) | (5.36) | (5.36) | (6.03) |
| ln $Pop_{i,t}$ | 0.8743[a] | 0.8785[a] | 0.8774[a] | 0.8864[a] | 0.8946[a] | 0.8896[a] | 0.8772[a] |
| | (23.20) | (24.28) | (23.69) | (22.54) | (22.67) | (23.00) | (23.96) |
| ln $Pop_{j,t}$ | 0.9914[a] | 0.9777[a] | 0.9708[a] | 0.8137[a] | 0.8459[a] | 0.8174[a] | 0.9776[a] |
| | (20.86) | (21.16) | (23.69) | (17.43) | (19.34) | (17.38) | (20.75) |
| ln $Area_i$ | -0.2836[a] | -0.2905[a] | -0.2842[a] | -0.2686[a] | -0.2834[a] | -0.2717[a] | -0.2786[a] |
| | (9.40) | (10.21) | (9.71) | (8.88) | (10.47) | (8.88) | (9.72) |
| ln $Area_j$ | -0.1446[c] | -0.1432[a] | -0.1063[a] | -0.1044[a] | -0.1298[a] | -0.0770[b] | -0.1591[a] |
| | (4.22) | (4.34) | (3.11) | (4.34) | (3.67) | (1.98) | (4.41) |
| ln $Dist_{i,j}$ | -0.6494[a] | -0.6113[a] | -0.6555[a] | -0.8485[a] | -0.7676[a] | -0.8371[a] | -0.6895[a] |
| | (13.54) | (15.13) | (15.13) | (16.12) | (15.64) | (16.30) | (14.27) |
| $Tie_{i,j}$ | 0.4848[a] | 0.5129[a] | 0.4664[a] | 0.2038[c] | 0.2778[a] | 0.2116[b] | 0.3780[a] |
| | (4.44) | (4.93) | (4.32) | (1.92) | (2.75) | (2.00) | (3.54) |
| $Rate_{i,t}$ | -0.0677[a] | -0.0685[a] | -0.0685[a] | -0.0759[a] | -0.0765[a] | -0.0772[a] | -0.0715[a] |
| | (5.43) | (5.43) | (5.43) | (6.09) | (6.41) | (6.13) | (5.83) |
| $Inf_{j,t}$ | -0.0002[a] | -0.0001 | -0.0001 | -0.0001[b] | -0.0001[c] | 0.000 | 0.000 |
| | (3.01) | (0.39) | (0.39) | (2.04) | (1.72) | (1.11) | (0.94) |
| ln $Inst_{j,t-1}$ | | 1.8453[a] | | | 2.4526[a] | | |
| | | (9.43) | | | (10.49) | | |
| ln $Economic\_Risk_{j,t-1}$ | | | 1.8679[a] | | | 1.4058[a] | 1.814[a] |
| | | | (7.49) | | | (4.47) | (7.41) |
| $Corruption_j$ | 0.4144[a] | 0.3136[a] | 0.3562[a] | | | | 0.3130[a] |
| | (14.3) | (9.43) | (11.52) | | | | (9.53) |
| $Anti\_direct_j$ | | | | 0.0584 | 0.0707[c] | 0.0440 | |
| | | | | (1.50) | (1.95) | (1.11) | |
| $Contract_j$ | | | | 0.4436[a] | 0.2983[a] | 0.3947[a] | |
| | | | | (12.60) | (12.60) | (10.90) | |
| ln $Legal\_time_j$ | | | | | | | 0.2747[a] |
| | | | | | | | (4.38) |
| Adj. $R^2$ | 0.5293 | 0.5394 | 0.5372 | 0.5418 | 0.5632 | 0.5457 | 0.5431 |
| Observations | 34404 | 34087 | 34087 | 30732 | 30415 | 30415 | 34087 |
| Country-pairs | 757 | 757 | 757 | 596 | 596 | 596 | 757 |

*Notes:* The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). For variable definitions and sources see Appendix B.

**Table 6**
**Banking Sector Characteristics & Inter-Bank Flows**

| | Aggregate Flows | | | Inter-Bank Flows | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| ln $Y_{i,t}$ | 0.2405[a] | 0.2405[a] | 0.2325[a] | 0.2034[a] | 0.1696[a] | 0.1955[a] |
| | (4.17) | (4.17) | (4.22) | (3.28) | (2.97) | (3.30) |
| ln $Y_{j,t}$ | 0.3117[a] | 0.3117[a] | 0.2335[a] | 0.2825[a] | 0.2173[a] | 0.2398[a] |
| | (10.17) | (10.17) | (8.11) | (8.06) | (7.25) | (7.45) |
| ln $Pop_{i,t}$ | 0.8616[a] | 0.8719[a] | 0.8685[a] | 0.8532[a] | 0.8618[a] | 0.8560[a] |
| | (21.50) | (23.65) | (22.70) | (19.73) | (21.48) | (20.55) |
| ln $Pop_{j,t}$ | 0.5786[a] | 0.6928[a] | 0.6182[a] | 0.7101[a] | 0.8017[a] | 0.7155[a] |
| | (20.86) | (15.67) | (13.96) | (13.10) | (15.48) | (13.32) |
| ln $Area_i$ | -0.2370[a] | -0.2601[a] | -0.2463[a] | -0.2238[a] | -0.2460[a] | -0.2302[a] |
| | (7.50) | (9.16) | (8.30) | (6.65) | (8.03) | (7.19) |
| ln $Area_j$ | -0.0389 | -0.0694[b] | -0.0063 | -0.1275[a] | -0.1686[a] | -0.1029[a] |
| | (1.06) | (2.00) | (0.18) | (3.16) | (4.38) | (2.66) |
| ln $Dist_{i,j}$ | -0.9135[a] | -0.7788[a] | -0.8775[a] | -0.9020[a] | -0.7658[a] | -0.8701[a] |
| | (20.22) | (20.22) | (20.22) | (18.01) | (15.64) | (18.05) |
| $Tie_{i,j}$ | 0.3698[a] | 0.4244[a] | 0.3556[a] | 0.3059[a] | 0.3849[a] | 0.3156[a] |
| | (3.30) | (3.95) | (3.20) | (2.61) | (3.39) | (2.70) |
| $Rate_{i,t}$ | -0.0746[a] | -0.0738[a] | -0.0759[a] | -0.0659[a] | -0.0653[a] | -0.0670[a] |
| | (5.56) | (5.83) | (5.80) | (4.79) | (5.00) | (4.96) |
| $Inf_{j,t}$ | -0.0003[a] | -0.0001[a] | -0.0001 | -0.0002[a] | -0.0001 | -0.0001 |
| | (6.59) | (1.34) | (0.59) | (4.94) | (1.23) | (0.62) |
| ln $Inst_{j,t-1}$ | | 2.6800[a] | | | 2.7969[a] | |
| | | (10.39) | | | (10.20) | |
| ln $Economic\_Risk_{j,t-1}$ | | | 2.5018[a] | | | 2.4933[a] |
| | | | (10.16) | | | (8.32) |
| $Gov\_Own_j$ | -1.9021[a] | -1.5298[a] | -1.6187[a] | -1.5612[a] | -1.2846[a] | -1.4706[a] |
| | (11.15) | (9.51) | (10.16) | (7.09) | (6.33) | (7.26) |
| $Bank\_Sound_j$ | | | | 0.1780[a] | 0.1476[a] | 0.1349[a] |
| | | | | (3.91) | (3.55) | (3.05) |
| $Overhead_j$ | | | | -7.0798[a] | -0.7862 | -1.3169 |
| | | | | (2.74) | (0.33) | (0.52) |
| Adj. $R^2$ | 0.5041 | 0.5346 | 0.5232 | 0.5182 | 0.5438 | 0.5300 |
| Observations | 35172 | 34748 | 34748 | 33075 | 32762 | 32762 |
| Country-pairs | 800 | 799 | 799 | 708 | 708 | 708 |

*Notes:* In columns (1), (2) and (3) the dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. In columns (4)—(6) the dependent variable is the natural logarithm of gross asset flows from banks located in country *i* ("source" country) to the banking sector only in country *j* ("recipient" country) in quarter *t*. Absolute value of *t*-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). For variable definitions and sources see Appendix B.

**Table 7**
**Developed vs. Developing Countries – European Union Effect**

| | High Income Countries | | | | Middle & Low Income | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| ln $Y_{i,t}$ | 0.2893[a] | 0.3246[a] | 0.3453[a] | 0.3291[a] | 0.0298 | 0.0212 |
| | (4.85) | (4.85) | (5.19) | (5.01) | (0.43) | (0.24) |
| ln $Y_{j,t}$ | 0.3121[a] | 0.3362[a] | 0.1637[b] | 0.1325[b] | 0.4415[a] | 0.0395[c] |
| | (6.13) | (6.33) | (2.49) | (2.45) | (6.13) | (1.78) |
| ln $Pop_{i,t}$ | 0.8955[a] | 0.8719[a] | 0.8598[a] | 0.8772[a] | 0.8307[a] | 0.9122[a] |
| | (20.66) | (18.51) | (18.51) | (18.68) | (17.33) | (15.68) |
| ln $Pop_{j,t}$ | 0.8272[a] | 0.8072[a] | 0.9093[a] | 0.8105[a] | 0.4415[a] | 0.2938 |
| | (18.17) | (16.62) | (17.37) | (13.55) | (6.13) | (1.45) |
| ln $Area_i$ | -0.3020[a] | -0.2960[a] | -0.2914[a] | -0.2946[a] | -0.2409[a] | -0.2737[a] |
| | (-8.98) | (8.46) | (8.28) | (8.44) | (6.77) | (6.59) |
| ln $Area_j$ | -0.1112[a] | -0.1100[a] | -0.1540[b] | -0.1215[a] | 0.3501[a] | 0.3019[b] |
| | (2.95) | (2.85) | (3.33) | (2.55) | (4.93) | (2.20) |
| ln $Dist_{i,j}$ | -0.7075[a] | -0.6530[a] | -0.6620[a] | -0.7078[a] | -0.5313[a] | -0.7808[a] |
| | (12.92) | (11.10) | (10.47) | (11.10) | (7.52) | (4.76) |
| $Tie_{i,j}$ | 0.3884[a] | 0.4069[a] | 0.2794[b] | 0.2061[c] | 0.5325[a] | 0.5094[b] |
| | (3.21) | (3.34) | (2.43) | (1.74) | (12.65) | (2.35) |
| $Rate_{i,t}$ | -0.0647[a] | -0.0647[a] | -0.0694[a] | -0.0690[a] | -0.0789[a] | -0.0976[a] |
| | (4.75) | (4.75) | (5.20) | (5.19) | (3.93) | (4.21) |
| $Inf_{j,t}$ | 0.0038[a] | 0.0038[a] | 0.0035[a] | 0.0037[a] | -0.0011 | -0.000 |
| | (5.17) | (5.17) | (5.43) | (5.55) | (1.57) | (0.29) |
| ln $Inst_{j,t-1}$ | 3.3658[a] | 3.3416[a] | 2.4383[a] | 1.9250[a] | 1.0574[b] | 1.5606[b] |
| | (9.70) | (9.67) | (6.91) | (5.20) | (3.73) | (4.84) |
| *EU_one* | | 0.0118 | 0.0565 | -0.0160 | — | — |
| | | (0.09) | (0.42) | (0.12) | | |
| *EU_both* | | 0.2694[b] | 0.2963[a] | 0.1798[c] | — | — |
| | | (2.48) | (2.86) | (1.67) | | |
| $Corruption_j$ | | | 0.0778 | 0.0197 | | 0.2199 |
| | | | (1.20) | (0.29) | | (1.92) |
| $Anti\_direct_j$ | | | 0.0956[b] | 0.0610 | | 0.0182 |
| | | | (2.43) | (1.41) | | (0.20) |
| $Contract_j$ | | | 0.1792[a] | 0.2308[a] | | 0.1759 |
| | | | (3.18) | (3.99) | | (0.45) |
| $Gov\_Own_j$ | | | | -0.8293[a] | | |
| | | | | (3.73) | | |
| Adj. $R^2$ | 0.5332 | 0.5349 | 0.5398 | 0.5428 | 0.3687 | 0.3645 |
| Observations | 22870 | 22870 | 21836 | 21836 | 12362 | 8579 |
| Country-pairs | 413 | 413 | 377 | 377 | 442 | 219 |

*Notes:* The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t.* Absolute value of *t*-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). In columns (1)—(4) estimation is performed only to high income countries, while in columns (5) and (6) only to low and middle income countries. Classification is taken from the World Bank. For variable definitions and sources see Appendix B.

**Table 8**
**Risk Characteristics (Aggregate and Inter-Bank Flows)**

| | Aggregate Flows | | | Inter-Bank Flows | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| ln $Y_{i,t}$ | 0.0637 | 0.0760[c] | 0.0870[b] | 0.1546[a] | 0.1553[a] | 0.1555[a] |
| | (1.46) | (1.79) | (2.00) | (3.45) | (3.48) | (3.48) |
| ln $Y_{j,t}$ | 0.2380[a] | 0.2620[a] | 0.3033[a] | 0.0312[c] | 0.0325[c] | 0.0309[c] |
| | (7.88) | (7.76) | (8.97) | (1.67) | (1.75) | (1.70) |
| ln $Pop_{i,t}$ | 2.4946[a] | 2.3425[a] | 2.4675[a] | 0.8674[a] | 0.8668[a] | 0.8667[a] |
| | (3.75) | (3.52) | (3.80) | (27.60) | (27.59) | (27.58) |
| ln $Pop_{j,t}$ | 0.8424[a] | 0.7439[a] | 0.6917[a] | -2.4077[a] | -2.096[a] | -2.0346[a] |
| | (24.09) | (19.00) | (18.80) | (5.09) | (4.61) | (4.22) |
| ln $Area_i$ | — | — | — | -0.2683[a] | -0.2688[a] | -0.2688[a] |
| | | | | (11.50) | (11.80) | (11.80) |
| ln $Area_j$ | -0.0954[a] | -0.0060 | -0.0265 | — | — | — |
| | (3.34) | (0.19) | (0.87) | | | |
| ln $Dist_{i,j}$ | -0.6451[a] | -0.7827[a] | -0.7443[a] | -0.6669[a] | -0.6655[a] | -0.6657[a] |
| | (16.32) | (18.25) | (17.50) | (12.96) | (12.93) | (12.94) |
| $Tie_{i,j}$ | 0.3875[a] | 0.3154[a] | 0.3622[a] | 0.4183[a] | 0.4204[a] | 0.4201[a] |
| | (4.08) | (2.96) | (3.55) | (4.17) | (4.20) | (4.19) |
| $Rate_{i,t}$ | -0.0026 | -0.0126 | -0.0026 | -0.0621[a] | -0.0615[a] | -0.0615[a] |
| | (0.25) | (0.15) | (0.23) | (6.34) | (6.28) | (6.28) |
| $Inf_{j,t}$ | -0.0001 | -0.0001 | -0.0001[a] | -0.0001 | -0.0001 | -0.0000 |
| | (1.52) | (0.97) | (2.61) | (0.11) | (0.59) | (0.39) |
| $Inst_{j,t-1}$ *[Political_Risk*$_{j,t-1}$*]* | 0.0588[a] | | | 0.0012[a] | | |
| | (18.02) | | | (4.18) | | |
| *Economic_Risk*$_{j,t-1}$ | | 0.0558[a] | | | -0.0030 | |
| | | (17.27) | | | (1.20) | |
| *Financial_Risk*$_{j,t-1}$ | | | 0.0371[a] | | | -0.0011 |
| | | | (18.02) | | | (0.50) |
| Adj. $R^2$ | 0.5633 | 0.5417 | 0.5354 | 0.6343 | 0.6338 | 0.6337 |
| Observations | 35232 | 35232 | 35232 | 33842 | 33842 | 33842 |
| Country-pairs | 855 | 855 | 855 | 819 | 819 | 819 |
| Fixed-Effects | "Source" | "Source" | "Source" | "Recipient" | "Recipient" | "Recipient" |

*Notes:* In columns (1), (2) and (3), the dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. In columns (4), (5) and (6) the dependent variable is the natural logarithm of gross asset flows from banks located in country *i* ("source" country) to the banking sector only in country *j* ("recipient" country) in quarter *t*. Absolute value of *t*-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). In columns (1)—(3) "source" country dummies are included, while in columns (4)—(6) "recipient" country dummies are included (intercepts not reported). For variable definitions and sources see Appendix B.

**Table 9**
**Liability Flows**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| ln $Y_{i,t}$ | 0.2634[a] | 0.0461 | 0.2962[a] | 0.2905[a] | -0.0741 | 0.0416 |
| | (4.02) | (1.13) | (4.32) | (4.26) | (1.24) | (1.08) |
| ln $Y_{j,t}$ | 0.2328[a] | 0.1216[a] | 0.0692[a] | 0.0608[b] | 0.2270[a] | 0.0118[a] |
| | (7.15) | (4.93) | (2.75) | (2.40) | (7.06) | (0.61) |
| ln $Pop_{i,t}$ | 0.7986[a] | 2.0331[a] | 0.8124[a] | 0.8137[a] | 0.7673[a] | 1.8668[a] |
| | (19.10) | (3.29) | (19.29) | (19.30) | (20.04) | (3.44) |
| ln $Pop_{j,t}$ | 0.7908[a] | 0.9624[a] | 0.8507[a] | 0.8902[a] | 0.7766[a] | -1.1970[a] |
| | (17.20) | (21.22) | (17.40) | (16.10) | (16.49) | (3.02) |
| ln $Area_i$ | -0.2508[a] | — | -0.2409[a] | -0.2539[a] | -0.1603[a] | — |
| | (7.45) | | (7.45) | (7.39) | (4.07) | |
| ln $Area_j$ | -0.1868[a] | -0.2446[a] | -0.0602[a] | -0.2537[a] | -0.0674[a] | — |
| | (4.76) | (4.76) | (4.59) | (6.23) | (4.68) | |
| ln $Dist_{i,j}$ | -0.7318[a] | -0.6461[a] | -0.7777[a] | -0.7523[a] | -0.7842[a] | -0.6663[a] |
| | (14.37) | (14.52) | (14.33) | (13.30) | (15.88) | (12.27) |
| $Tie_{i,j}$ | 0.5771[a] | 0.5771[a] | 0.2447[b] | 0.2650[b] | 0.4779[a] | 0.0787 |
| | (4.82) | (4.82) | (2.11) | (2.26) | (3.96) | (0.83) |
| $Rate_{i,t}$ | -0.0516[a] | 0.0157 | -0.0516[a] | -0.0593[a] | -0.0674[a] | 0.0154[c] |
| | (3.77) | (1.65) | (3.77) | (4.54) | (4.68) | (1.86) |
| $Inf_{j,t}$ | -0.002[a] | -0.002[a] | -0.0001 | -0.0001 | -0.0002[a] | -0.0001[a] |
| | (3.05) | (2.78) | (0.94) | (0.98) | (3.27) | (2.60) |
| ln $Inst_{j,t-1}$ | 2.7482[a] | 1.0507[a] | 1.5642[a] | 1.3776[a] | 2.6572[a] | 0.3099[b] |
| | (9.13) | (3.87) | (6.07) | (4.75) | (8.99) | (2.17) |
| $Corruption_j$ | | 0.3407[a] | | 0.0915[a] | | |
| | | (9.70) | | (1.63) | | |
| $Anti\_direct_j$ | | | 0.1268[a] | 0.1051[a] | | |
| | | | (3.09) | (2.62) | | |
| $Contract_j$ | | | 0.3622[a] | 0.2935[a] | | |
| | | | (9.19) | (5.36) | | |
| ln $Inst_{i,t-1}$ | | | | | 4.4664[a] | 1.7398[a] |
| | | | | | (7.54) | (5.30) |
| Adj. $R^2$ | 0.4655 | 0.5496 | 0.5057 | 0.5067 | 0.4743 | 0.6349 |
| Observations | 35257 | 33967 | 29964 | 29964 | 35457 | 35457 |
| Country-pairs | 861 | 760 | 589 | 589 | 861 | 861 |
| Fixed effects | No | "Source" | No | No | No | "Source" & "Recipient" |

*Notes:* The dependent variable is the natural logarithm of gross liability flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t.* Absolute value of *t*-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). The specification in column (2) includes "source" country fixed-effects (intercepts not reported). The specification in column (6) includes both "source" and "recipient" country dummies (intercepts not reported). For variable definitions and sources see Appendix B.

**Table 10**
**Sensitivity Analysis: Additional Controls**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| ln $Y_{i,t}$ | 0.1964[a] | 0.0659 | 0.1972[a] | 0.1968[a] | 0.1968[a] | 0.2247[a] | 0.1047[b] |
| | (3.67) | (1.51) | (4.03) | (4.82) | (3.94) | (9.31) | (2.34) |
| ln $Y_{j,t}$ | 0.2084[b] | 0.1807[b] | 0.0386[b] | 0.0725[a] | 0.0574[a] | 0.0325[a] | 0.0593[a] |
| | (7.25) | (7.14) | (2.44) | (3.09) | (3.57) | (3.41) | (4.35) |
| ln $Pop_{i,t}$ | 0.8770[a] | 1.8032[a] | 0.8980[a] | 0.8761[a] | 0.8946[a] | 5.7873[a] | 1.4637[b] |
| | (23.42) | (2.87)) | (25.48) | (23.20) | (25.45) | (27.12) | (2.47) |
| ln $Pop_{j,t}$ | 0.8432[a] | 0.8459[a] | 0.9138[a] | 0.8396[a] | 0.8510[a] | 1.0452[a] | 0.8541[a] |
| | (18.06) | (22.08) | (17.30) | (15.07) | (16.94) | (6.12) | (10.15) |
| ln $Area_i$ | -0.2732[a] | __ | -0.2902[a] | -0.2369[a] | -0.2879[a] | __ | __ |
| | (9.52) | | (11.16) | (7.98) | (10.98) | | |
| ln $Area_j$ | -0.1295[a] | -0.1098[a] | -0.0931[b] | -0.0616[c] | -0.0914[b] | __ | -0.0966[b] |
| | (3.76) | (3.82) | (2.51) | (1.69) | (2.40) | | (2.40) |
| ln $Dist_{i,j}$ | -0.7514[a] | -0.6940[a] | -0.7276[a] | -0.9361[a] | -0.7034[a] | __ | -0.6768[a] |
| | (15.73) | (17.02) | (13.80) | (18.16) | (15.92) | | (3.20) |
| $Tie_{i,j}$ | 0.4747[a] | 0.3079[a] | 0.2916[a] | 0.1579 | 0.2788[a] | __ | 0.0417 |
| | (4.57) | (3.33) | (2.88) | (1.45) | (2.77) | | (0.45) |
| $Rate_{i,t}$ | -0.0782[a] | -0.0070 | -0.0787[a] | -0.1763[a] | -0.0762[a] | 0.0567[a] | 0.0105 |
| | (6.18) | (0.69) | (6.77) | (10.19) | (6.56) | (18.99) | (1.19) |
| $Inf_{j,t}$ | 0.0000 | -0.0002 | 0.0001[b] | -0.0001 | 0.0001[b] | 0.0000[a] | 0.0001 |
| | (0.87) | (0.45) | (2.27) | (0.33) | (2.38) | (2.08) | (0.00) |
| ln $Inst_{j,t-1}$ | 2.7401[a] | 2.2776[a] | 1.2368[a] | __ | 1.1925[a] | 0.1401[c] | 1.1533[a] |
| | (12.09) | (12.92) | (5.41) | | (5.03) | (1.67) | (5.93) |
| $Schooling_{j,t}$ | 0.1250[a] | 0.0942[a] | 0.0141 | 0.1124[a] | 0.0897[b] | | 0.0897[b] |
| | (5.57) | (4.87) | (0.42) | (3.23) | (2.06) | | (2.06) |
| ln $Life\_expect_{j,t}$ | | 4.3397[a] | 4.3609[a] | __ | 4.1834[a] | | 4.1834[a] |
| | | (6.96) | (5.93) | | (6.14) | | (6.14) |
| $Corruption_j$ | | | 0.0897[b] | 0.1433[a] | 0.0586 | | 0.0645[b] |
| | | | (2.06) | (3.13) | (1.38) | | (1.92) |
| $Anti\_direct_j$ | | | -0.0284 | 0.0546 | 0.0398 | | 0.0277 |
| | | | (0.77) | (1.39) | (1.10) | | (0.83) |
| $Contract_j$ | | | 0.2512[a] | 0.1977[a] | 0.2606[a] | | 0.2791[a] |
| | | | (4.11) | (2.81) | (5.73) | | (7.58) |
| $Gov\_Own_j$ | | | -0.6092[a] | -0.8626[a] | -0.6795[a] | | -0.7316[a] |
| | | | (3.48) | (4.58) | (3.83) | | (4.89) |
| $ER\_reg1_{j,t}$ | | | | | -0.0238[a] | -0.0290[a] | |
| | | | | | (2.79) | (9.23) | |
| $ER\_reg2_{j,t}$ | | | | | | | -0.0734[a] |
| | | | | | | | (3.03) |
| Adj. $R^2$ | 0.5246 | 0.5814 | 0.5824 | 0.7853 | 0.5824 | 0.0865 | 0.6272 |
| Observations | 28269 | 28269 | 25762 | 26067 | 28651 | 32884 | 28651 |
| Fixed-effects | No | "Source" | No | "Between" | No | "Within" | "Source" |

*Notes:* The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). The specifications given in columns (2) and (7) include "source" country fixed-effects (intercepts not reported). In column (4) results from the cross-section of country-pairs is reported ("between"). Column (6) reports "fixed-effect" estimates (within). The $R^2$ in column (4) and (5) is the between and the within $R^2$, respectively. For variable definitions see Appendix B.

**Table 11**
**Sensitivity Analysis: BIS data & Endogeneity**

| | OLS | Tobit | | | IV | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | | (4) | (5) | (6) |
| ln $Y_{i,t}$ | 0.4611[a] | 0.3769[a] | 0.4604[a] | 0.4406[a] | 0.1773[a] | 0.1793[a] | 0.1197[a] |
| | (4.10) | (4.26) | (12.48) | (5.49) | (3.33) | (3.43) | (2.60) |
| ln $Y_{j,t}$ | 0.2408[a] | 0.4627[a] | 0.2869[a] | 0.2583[a] | 0.2131[a] | 0.1487[a] | 0.1288[a] |
| | (3.32) | (33.21) | (21.21) | (19.66) | (5.59) | (4.91) | (5.69) |
| ln $Pop_{i,t}$ | 1.7571[a] | 1.2426 | 1.8321[a] | 3.3917[a] | 0.8666[a] | 0.8790[a] | 1.645[a] |
| | (18.11) | (1.26) | (82.87) | (4.03) | (23.92) | (24.60) | (2.81) |
| ln $Pop_{j,t}$ | 1.1354[a] | 1.5177[a] | 1.1644[a] | 1.2079[a] | 0.8212[a] | 0.9383[a] | 0.8337[a] |
| | (9.84) | (58.71) | (40.24) | (38.78) | (16.10) | (17.26) | (22.30) |
| ln $Area_i$ | -0.6048[a] | — | -0.6318[a] | — | -0.2749[a] | -0.2889[a] | — |
| | (8.11) | | (39.99) | | (9.71) | (10.31) | |
| ln $Area_j$ | -0.0199 | 0.0115 | -0.0750[a] | -0.1069[a] | -0.0655[c] | -0.1031[a] | -0.1250[b] |
| | (0.25) | (0.53) | (3.65) | (5.28) | (1.84) | (2.99) | (2.52) |
| ln $Dist_{i,j}$ | -1.4625[a] | -1.2267[a] | -1.5199[a] | -1.2455[a] | -0.6420[a] | -0.6239[a] | -0.8154[a] |
| | (12.99) | (40.90) | (50.26) | (41.04) | (11.99) | (13.06) | (16.22) |
| $Tie_{i,j}$ | 0.2328 | 0.8359[a] | 0.2395[a] | 0.0325 | 0.6442 | 0.5511 | 0.1034 |
| | (0.92) | (3.72) | (3.72) | (0.49) | (6.24) | (6.19) | (1.12) |
| $Rate_{i,t}$ | -0.1788[a] | 0.0374[b] | -0.1908[a] | -0.0160 | -0.0672[a] | -0.0662[a] | 0.0112 |
| | (5.98) | (2.21) | (18.97) | (1.08) | (5.28) | (5.54) | (1.24) |
| $Inf_{j,t}$ | -0.0003[c] | -0.0003[a] | -0.0002[a] | -0.0002[a] | -0.0000 | -0.0001 | -0.0001 |
| | (1.86) | (4.27) | (3.48) | (3.21) | (0.46) | (1.82) | (1.35) |
| ln $Life\_expect_{j,t}$ | 7.0688[a] | 11.4577[a] | | 5.060[a] | 4.9912[a] | 4.3571[a] | 5.721[a] |
| | (4.85) | (31.41) | | (13.75) | (4.79) | (7.95) | (8.87) |
| ln $Inst_{j,t-1}$ | | 4.4113[a] | 4.1016[a] | 3.3286[a] | 2.6122[a] | | |
| | | (24.73) | (23.31) | (17.71) | (2.76) | | |
| $Corruption_j$ | 0.1970[a] | | 0.0742[a] | 0.1397[a] | | 0.2903[a] | |
| | (2.58) | | (2.58) | (4.90) | | (6.19) | |
| $Anti\_direct_j$ | 0.0229 | | 0.0791[b] | 0.0311 | | | 0.1423 |
| | (0.26) | | (2.06) | (1.40) | | | (1.64) |
| $Contract_j$ | 0.2964[b] | | 0.2841[a] | 0.2668[a] | | | 0.2503[a] |
| | (2.44) | | (2.58) | (8.50) | | | (4.03) |
| $Gov\_Own_j$ | -0.8744[b] | | -0.6092[a] | -0.3541[a] | | | |
| | (2.06) | | (3.48) | (3.05) | | | |
| Adj. $R^2$ | 0.4036 | 0.0901 | 0.0834 | 0.1000 | 0.5305 | 0.5482 | 0.6042 |
| Observations | 32862 | 39123 | 32521 | 32541 | 35232 | 34404 | 30732 |
| Left-censored Observations | 2130 | 3891 | 2106 | 2106 | - | - | |
| Country-pairs | | | | | 855 | 757 | 596 |
| Fixed-effects | No | "Source" | No | "Source" | No | No | "Source" |
| Over-id. (p-values) | | | | | [0.184] | [0.488] | [0.138] |

*Notes:* The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. In column (1) estimation is performed by OLS with period fixed effects (intercepts not reported). In columns (2), (3) and (4) estimation is performed with Tobit (maximum likelihood). The pseudo-$R^2$. (defined as one minus the ratio of the full model to the constant-only log-likelihoods) is reported. Columns (5)-- (7) report instrumental variables (IV) estimates. The last row reports the p-value of the Hansen test of over-identifying restrictions. The instrument set for the composite institutions-political risk is latitude, ethnical, religious, and linguistic fragmentation. Corruption in column (6) is instrumented with religious, ethnical, and linguistic fragmentation. *Anti_directj* and $Contract_j$ in column (7) are being instrumented with legal origin dummies. For variable definitions see Appendix B.

**Table 12**
**Sample Sensitivity Analysis**

| | | $Inst_{j,t-1}$ | $Corruption_j$ | $Contract_j$ | $Anti\_directs_j$ | $Gov\_Own_j$ |
|---|---|---|---|---|---|---|
| | | | *Panel A* | | | |
| | (a) | 0.0574[a] | — | — | — | — |
| | | (15.73) | | | | |
| Excluding USA | (b) | — | -0.0280 | 0.2984[a] | 0.1317[a] | -0.9014[a] |
| | | | (0.73) | (5.81) | (2.74) | (4.72) |
| | (c) | 0.0339[a] | 0.0227 | 0.2285[a] | 0.0580 | -0.5407[a] |
| | | (8.01) | (0.61) | (4.83) | (1.23) | (2.99) |
| | | | *Panel B* | | | |
| | (a) | 0.0555[a] | — | — | — | — |
| | | (15.51) | | | | |
| Excluding G3 | (b) | — | -0.0497 | 0.2855[a] | 0.1258[a] | -0.9021[a] |
| | | | (1.28) | (5.54) | (2.64) | (4.77) |
| | (c) | 0.0327[a] | 0.0010 | 0.2194[a] | 0.0556 | -0.5550[a] |
| | | (7.87) | (0.03) | (4.58) | (1.18) | (3.10) |
| | | | *Panel C* | | | |
| | (a) | 0.0436[a] | — | — | — | — |
| | | (10.35) | | | | |
| Excluding intra-G7 | (b) | — | -0.1982[a] | 0.3013[a] | 0.0508 | -1.0852[a] |
| | | | (3.58) | (4.98) | (0.88) | (5.06) |
| | (c) | 0.0212[a] | -0.1634[a] | 0.2571[a] | -0.0711 | -0.8314[a] |
| | | (4.85) | (2.96) | (4.49) | (1.28) | (3.96) |
| | | | *Panel D* | | | |
| | (a) | 0.0529[a] | — | — | — | — |
| | | (14.13) | | | | |
| Data before 1994 | (b) | — | -0.0610 | 0.3809[a] | 0.1143[b] | -0.8519[a] |
| | | | (1.33) | (6.71) | (1.92) | (3.89) |
| | (c) | 0.0316[a] | 0.0495 | 0.3037[a] | -0.0215 | -0.6226[a] |
| | | (5.88) | (1.05) | (5.33) | (0.34) | (2.99) |
| | | | *Panel E* | | | |
| | (a) | 0.0677[a] | — | — | — | — |
| | | (13.18) | | | | |
| Data after 1993 | (b) | — | 0.020 | 0.2142[a] | 0.1477[a] | -0.9398[a] |
| | | | (0.05) | (3.69) | (2.87) | (4.39) |
| | (c) | 0.0457[a] | 0.0173 | 0.1652[a] | 0.0854[c] | -0.4423[b] |
| | | (8.96) | (0.43) | (3.11) | (1.67) | (2.19) |
| | | | *Panel F* | | | |
| | (a) | 0.05587[a] | — | — | — | — |
| | | (16.43) | | | | |
| Without year intercepts | (b) | — | -0.0189 | 0.2996[a] | 0.1258[a] | -0.9100[a] |
| | | | (0.50) | (5.88) | (2.59) | (4.75) |
| | (c) | 0.0354[a] | 0.0306 | 0.2263[a] | 0.0480 | -0.5332[a] |
| | | (8.70) | (0.83) | (4.81) | (1.01) | (2.94) |

*Notes:* The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. [a, b, c] denote significance at the 1%, 5%, and 10% levels, respectively. Not recorded independent variables: ln $Y_{i,t}$; ln $Y_{j,t}$; ln $Pop_{i,t}$; ln $Pop_{j,t}$; ln $Area_i$; ln $Area_j$; ln $Dist_{i,j}$; $Tie_{i,j}$; $Rate_{i,t}$; $Inf_{j,t}$ For variable definitions see Appendix B.

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