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ABSTRACT

What Drives International Financial Flows? Politics, Institutions and Other Determinants*

This paper uses a large panel of financial flow data from banks to assess how institutions affect international lending. First, employing a time varying composite institutional quality index in a fixed-effects framework, the paper shows that institutional improvements are followed by significant increases in international finance. Second, cross-sectional models also show a strong effect of initial levels of institutional quality on future bank lending. Third, instrumental variable estimates further show that the historically predetermined component of institutional development is also a significant correlate of international bank inflows. The results thus suggest that institutional underdeveloped can explain a significant part of Lucas (1990) paradox of why doesn't capital flow from rich to poor countries. The analysis also does a first-step towards understanding which exactly institutional features affect international banking.

JEL Classification: F21, F34, G21 and K00
Keywords: banks, capital flows, institutions, international finance, law and finance and politics

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1 Introduction

Cross-border capital flows have skyrocketed in the last decades (e.g. Lane and Milesi-Ferretti, 2007). Yet in spite of the rapid increase in financial globalization most countries still lack the necessary capital to finance domestic investment.[1] In contrast to the standard neoclassical model with decreasing returns and frictionless markets that predicts capital flowing to poor countries where marginal returns are higher, international financial flows are moving to the industrial world (e.g. Prasad, Rajan, and Subramanian, 2007; Lane and Milesi-Ferretti, 2008). Many explanations have been put forward in addressing Lucas'(1990) inquiry on why doesn't capital flow from rich to poor countries. For example capital flows to the developing world may be blocked by moral hazard and lack of collateral (e.g. Gertler and Rogoff, 1990), a history of serial default (e.g. Reinhart and Rogoff, 2004), or due to informational frictions (e.g. Portes and Rey, 2005). In addition capital may flow "upwards", as rich countries's larger market size is associated with superior diversification opportunities and low transaction costs (e.g. Martin and Rey, 2005). Yet Caselli and Freyer (2007) show that (in a standard neoclassical model) the marginal product of capital is surprisingly equalized across countries.[2] Their research suggests that the key explanation to Lucas paradox is the lack of complementary to capital factors in poor countries, human capital and especially total-factor-productivity (TFP). This paper contributes to this literature by showing that institutional underdevelopment (political risk) in a key explanatory factor of the lack of foreign financing in the developing and underdeveloped world. Given the strong effect of institutions on productivity (see Acemoglu, Johnson and Robinson, 2005, for a review) this paper's results can be viewed as revealing a specific mechanism on how property rights and contractual institutions affect economic development.

This paper combines financial bank flows to up to 140 (industrial, emerging, and underdeveloped) countries from the mid-eighties until 2002 with institutional proxies to study the impact of institutions on cross-border bank lending. Employing both panel fixed-effects and cross-sectional models the empirical analysis reveals a robust relationship between well-functioning institutions and foreign bank flows. The effect of institutional quality does not seems to be driven by income, human capital, or financial-economic risk. The strong insti-

[1] See Bosworth and Collins (1999) and Prasad, Rajan and Subramanian (2007) for surveys on the effect of capital flows on investment and growth.

[2] In line with this result, Ju and Wei (2006) present a two-sector Heckscher-Ohlin model of capital flows that yields factor price equalization.

tutions bank flows nexus is also present when we use instrumental variable techniques to account for endogeneity and measurement error.

This paper is closely related to empirical work that examines the effect of institutional and informational frictions on various types of foreign investment (e.g. Wei, 2000a,b; Portes, Rey, and Oh, 2001; Wu and Wei, 2002; Portes and Rey, 2005; Buch, 2003; Gelos and Wei, 2005; Alfaro *et al.* 2007). Using mainly cross-sectional approaches this literature has revealed a significant correlation between various types of institutional quality, such as low corruption and well-functioning bureaucracy, and international capital flows and holdings. Yet this correlation does not necessarily imply a causal relationship. First, both well-functioning institutions and foreign investment may be driven by a third, hard-to-account-for factor, such as trust or social capital (e.g. Guiso, *et al.* 2004, 2006). Second, there is the issue of reverse causation. Since foreign investors ask pressure to governments to enhance investor's protection, remove bureaucratic barriers, and tackle corruption, the correlation may (partly at least) capture this effect. This paper aims to advance this literature, employing two different methodologies that account for these drawbacks.

First, I utilize the time-series dimension employing panel techniques that account for country unobserved characteristics. Controlling for fixed-effects accounts for (to a first-approximation time-invariant) social norms, culture, geography, and trust, that affect both finance and institutional quality. This method also addresses directly whether institutional reforms are rewarded by foreign investors in terms of increased lending. The panel estimates are based on two datasets of bank lending from the Bank of International Settlements (BIS). The first covers at a quarterly frequency bank flows from 19 "source" to 50 "recipient-host" countries, while the second dataset reports annual aggregate flows to 140 recipient countries, both over the $1984-2002$ period. The first dataset allows controlling for both "push" and "pull" factors. The second enables me to examine the effect of institutions on bank flows in a much wider sample than previous work. Controlling for standard gravity factors (such as distance, size, etc.), time trends, and source country characteristics the fixed-effect estimates show that institutional improvements are followed by increased bank lending.

Second, to account for reverse causality, I build on the institutions and development literature (La Porta *et al.* 1998; Hall and Jones, 1999; Acemoglu, Johnson, and Robinson, 2001, 2002) and estimate cross-sectional models using instrumental variable techniques.[3] Besides

[3] Alfaro *et al.* (2007) also use instrumental variable techniques to assess the effect of institutional quality on net aggregate flows, finding similar results of a significant positive relationship.

endogeneity the IV estimates also account for measurement error in the institutional quality proxies. The IV estimates show that the historically predermined component of institutional performance from colonial history is a significant correlate of foreign bank lending. The results are similar when I estimate cross-sectional models with initial values.

Other related work Besides contributing to the literature on the Lucas paradox, the paper's results have implications for some other major puzzles in international macroeconomics, such as the portfolio home bias, the Feldstein-Horioka observation of a high investment-savings correlation, and the lack of international risk sharing (Obstfeld and Rogoff, 2000). The paper also fits to the law and finance literature (e.g. La Porta *et al.*, 1997, 1998, 1999). This research project has focused primarily on assessing the impact of legal (and to a lesser extent political) characteristics in *domestic* financial patterns, like IPO's, the breadth of equity and bond markets, etc.[4] For example Djankov, Mc Liesh and Shleifer (2007) show that sound investor protection leads to increases in private credit. Private credit is, however, an aggregate of both domestic and foreign investment. The current study thus adds to this literature, by providing evidence on a significant impact of politics and legal institutions in explaining differences in *international* finance.

From a theoretical standpoint the paper's results add to recent efforts to incorporate institutional frictions in international macro models (e.g. Ju and Wei, 2007; Gourinchas and Jeanne, 2005). Yet, the most closely related theoretical work to the empirical analysis comes from the 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-enforced investor's rights. Domestic and foreign investors anticipate the likelihood of diversion and are unwilling to invest in countries with a high risk of expropriation. This paper's results support this theoretical prediction, by showing that poor legal and property rights institutions block international bank lending.

[4]For example, 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, 2004), and large project finance deals (Esty and Megginson, 2003).

Outline The paper is structured as follows: The next Section describes the empirical methodology and presents the data. Section 3 reports fixed-effect estimates on the effect of institutional quality on international bank flows. In Section 4 I turn to cross-sectional approaches. I start by estimating the "between" effect of institutional quality on bank loans. I then use instrumental variable estimates that directly tackle endogeneity. I also investigate which sub-component of the composite measure has the biggest explanatory power in predicting future bank lending. Section 5 summarizes.

2 Methodology, Data and Preliminary Evidence

2.1 Empirical Model

The empirical analysis is carried by estimating variants of the following model:

$$\ln(F_j) = X_j'\beta + \gamma IQL_j + \varepsilon_j \tag{1}$$

The dependent variable is the logarithm of foreign net bank flows in country j.[5] Vector X includes control variables, mainly related to the size of the economy, such as income and population. The main interest is on the sign and magnitude of coefficient γ on an aggregate measure of institutional quality (IQL) in country j.

There are two major challenges in identifying the effect of institutions on international bank flows with regression equation (1). First it is hard to account for all factors that may affect international lending. For example, foreign capital flows and institutional quality may be both affected by hard-to-measure factors such as social capital (e.g. Guiso *et al.* 2004), religious norms (e.g. Stulz and Williamson, 2003), trust (e.g. Guiso *et al.* 2007), geography and initial endowments (e.g. Beck, Demirguc-Kunt, and Levine, 2003). This omitted variable problem is magnified by the limited number of countries (usually $50 - 100$) and multicollinearity, since countries with well-functioning institutions tend to also have high levels of human capital, open markets, sophisticated financial intermediaries, etc. Second, a positive correlation between capital flows and institutions may be driven by reverse causation.

To account for the first concern (omitted variables and unobserved country heterogeneity)

[5] When there are negative flows (indicating outflows), I take the log of the absolute value of flows and then change the sign.

in Section 3 I will exploit the time-series variation of two large panel datasets of bilateral and aggregate bank flows employing fixed-effect estimates. Specifically using a panel of quarterly bilateral bank flows I will estimate variants of the following "gravity" model,

$$\begin{aligned} \ln(F_{i,j,t}) &= X'_{j,t}\beta_j + X'_{i,t}\beta_i + \delta_1 \ln(DIST_{i,j}) + \delta_2 TIE_{i,j} + \\ &\quad \gamma INST_{j,t-1} + \varphi_i + \varphi_j + a_t + [a_{i,t} + a_{i,j}] + \varepsilon_{i,j,t}, \end{aligned} \tag{2}$$

where i and j indicate the "*source*" and "*recipient*" country respectively and t denotes time. The dependent variable is the natural logarithm of capital inflows from banks located in country i to all sectors of the economy in country j in quarter t. The focus of the empirical analysis is on the time-varying institutional quality - political risk index in the recipient country $[INST_{j,t-1}]$. The specification controls for the standard gravity controls. Economic size is proxied by real per capita GDP $[Y]$, population $[POP]$, and land area $[AREA]$. Information frictions and transaction costs are captured with distance $[DIST_{i,j}]$ and a dummy variable that takes on the value one when i and j have common colonial ties or speak the same language $[TIE_{i,j}]$.[6] φ_i and φ_j are fixed-effects that account for time-invariant country characteristics in the "source" and "recipient" country, respectively. The specifications include either general time fixed-effects (a_t) or source-country time-specific fixed-effects $(a_{i,t})$. In many models I will also include a vector of country pair fixed-effects $(a_{i,j})$, as this fully accounts for unobserved heterogeneity in bank lending between source and recipient country. I will also work with an alternative, more representative, dataset of aggregate annual bank flows in country j. This dataset allows me to examine the link between institutional quality and net bank flows in 140 countries.[7]

Yet while the panel techniques account for time-invariant country characteristics and time trends, the results may still be driven by reverse causation. In addition fixed-effect models usually magnify measurement error problems, something key in studies involving hard-to-quantify institutions. Thus in Section 4 I will estimate (1) using initial values of the explanatory variables and instrumental variable techniques that directly tackle endogeneity.

[6] An empirical gravity equation for financial flows arises naturally from international macro models (e.g. Obstfeld and Rogoff, 2000). Following Martin and Rey's (2005) representative agent model of asset flows, "size" is proxied by (the logarithms of) real per capita GDP and population.

[7] Previous studies on capital flows and holdings have relied on smaller samples. For example Portes and Rey (2005) work with 14 countries, Wei (2000a) with 45 countries, and Gelos and Wei (2005) with 53 countries. Alfaro *et al.* (2007) exploit a wider sample of 98 countries.

2.2 Data

The dataset consists of quarterly (in Section 4*a*) and annual (in Section 4*b* and Section 5) observations, starting from the first quarter of 1984 until the end of 2002. The data can be separated into: *i*) the cross-border bank flow data, *ii*) institutional performance measures, and *iii*) data on other controls.

2.2.1 Bank Flow Data

Data on bank flows is taken from the Bank of International Settlement's (BIS) Locational Banking Statistics. This database reports aggregate asset holdings of banks located in up to 40 jurisdictions ("the *reporting area*") in more than 150 countries ("*the vis-à-vis countries*") at the quarterly basis since 1977. Due to the hub nature of international banking, the data covers almost all cross-border bank lending.[8] The data are originally collected by domestic Monetary Authorities and cover the international exposure of all (99% or 100%) of domestic banking institutions. Data includes banks' on-balance sheet exposure, such as cross-border loans, debt investment, etc. The dataset mainly includes standard inter-bank lending activities, such as deposits, loans, bank-to-bank credit lines and trade-related credit. It also "*covers portfolio and direct investment flows*" (BIS 2003a), like holdings of securities, participations in non-resident entities and direct investment in subsidiaries. The BIS dataset does not distinguish between inter-bank loans, debt and portfolio investment. Going over the data documentation (BIS 2003a,b; Wooldridge, 2002) it seems that during the initial years most flows reflect bank-to-bank transactions and credit lines, while FDI and equity flows have become more important after the mid-nineties.[9] The data reflects the investment decision of international banks (to lend to other financial institutions or other foreign entities) and are not contaminated by individual investor's cash-flow transactions. Flows are estimated by the BIS as the exchange rate adjusted changes in total assets, accounting for "valuation effects".[10] Flows are converted in real terms using the US GDP deflator.

[8] The BIS reports that countries are asked to contribute only "*....when their cross–border banking business becomes substantial*" (BIS 2003b). In the eighties and early nineties the dataset covers bank flows from roughly 20 industrial countries. The only sizable amount missing is bank flows from "off-shore" centers.

[9] Due to this limitation the analysis can not shed much light in the literature that studies the effect of domestic factors in explaining the composition of foreign capital flows (e.g. Albuquerque, 2003; Razin *et al.*, 1998; Daude and Fratzscher, 2007; Ju and Wei, 2007).

[10] Simply taking differences from holdings could be very misleading when estimating net flows, since exchange rate movements may mechanically alter asset value. Since banks report the currency denomination of their assets the BIS has constructed quite precise flow estimates (see Wooldridge, 2002, for details).

2.2.2 Institutional Quality

I use as a proxy of institutional quality a composite indicator constructed by Political Risk Services (PRS), namely the International Country Risk Guide (ICRG) "political risk" rating. In contrast to most institutional measures that are purely cross-sectional or exhibit limited time-variability, the political risk rating ($INST$) exhibits substantial "*within*" country variation.[11] This enables me to address the key policy question: Controlling for time-invariant characteristics, is an institutional improvement associated with an increased volume of international capital movements? The ICRG index is reported at a monthly basis, since 1984 and can be directly merged with the BIS data without losing many observations. $INST$ is a composite index of political, legal, and bureaucratic institutions. The index also reflects ethnic tensions and corruption. It ranges from zero to one hundred, with lower values suggesting poorly performing institutions. The *Data Appendix* reports details on the components and weights of the composite institutional measure. Since it is not crystal-clear which part of institutional quality in pulling foreign bank capital, in Section 5*b* I present cross-sectional estimates using initial values of the subcomponents of this measure in an effort to unbundle institutions (Acemoglu and Johnson, 2005).

2.2.3 Other data

Distance, ethno-linguistic ties, and land area are retrieved from Andrew Rose's web-site (Glick and Rose, 2002). GDP and population are taken from the IMF's International Financial Statistics (for the quarterly frequency models) and the World Bank's World Development Indicators Database (for the annual panel and the cross-sectional models). 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. I will also use average years of schooling (from Barro-Lee, 2001) and life expectancy at birth (from WB WDI) to control for human capital and health differences. The *Data Appendix* provides the sources and definitions of all variables.

[11] The high "within" country variation of many institutional quality measures has been emphasized by Glaeser, La Porta, Lopez-de-Silanes and Shleifer (2004). Their critique to the institutions and long-run economic development studies is that due to this high within country variation, the political risk indicator does not capture permanent institutional characteristics. While this is clearly a key point when examining the impact of institutional quality on development, in this paper's context this high variation is particularly desirable. This is because it enables me to identify the response of international investor's on institutional changes that might either be permanent or short-lived. The possibility that reforms and institutional changes might be reversed is in fact a key risk factor that foreign investors bear.

2.2.4 Descriptives

Supplementary Appendix Table 1 presents descriptive statistics and Supplementary Appendix Table 2 gives the correlation matrix of the variables employed in the analysis. Cross-country institutional performance differs enormously. For example the composite institutional index ranges from 33 (in the Philippines in 1991) to 97 (in Switzerland and the Netherlands in various years). In the enlarged sample of 140 countries the variation is even larger, since many underdeveloped countries get very low ratings (for example Lebanon, Somalia, Sudan, and Zaire get in many years ratings below 20). Most importantly the "*within*" country variation, which is particularly desirable in a panel context, is also substantial.[12]

3 Panel Estimates

First, I report results at the quarterly bilateral flow sample. Second, I turn to the enlarged sample that enables me to assess the "within" effect of institutional quality on cross-border lending in up to 140 countries.[13]

3.1 Panel estimates in the country pair sample

3.1.1 Main Results

Table 1 presents OLS estimates in the country-pair sample that covers bilateral bank inflows from 19 "source" to 50 "recipient-host" countries in the $1984-2002$ period. Standard errors adjusted for clustered heteroskedasticity at the recipient country are reported in parenthesis below coefficient estimates.[14]

Model (1) reports estimates of a standard "gravity" model of bank flows. Distance enters

[12] The correlation structure suggests a significant association between the composite institutional index and bank flows. Interestingly this correlation is higher than the correlation of bank flows with the usual gravity controls, such as distance, ethnoliguistic tie, and income in the capital recipient country (see Supplementary Appendix Table 2-Panel *A*).

[13] Regression diagnostics indicate no serious mis-specification problems. Box-Cox tests suggest that the usually applied in gravity models logarithmic transformation is reasonable. Although the bank flow data exhibit some inertia, panel unit-root tests reject the null of non-stationarity.

[14] Correcting for recipient country clustered heteroskedasticity and autocorrelation yields the most conservative standard errors (compared to standard Huber-White or Newey-West standard errors). I also corrected standard errors with the multi-clustering approach, developed recently by Cameron, Gelbach, and Miller (2007). Clustering standard errors at both the source country and the recipient country (and even the time dimension) yields very similar standard errors as those reported in Tables 1 and 2.

with a significant negative coefficient. Although it might be puzzling to interpret a negative effect of distance on bank lending, since transaction fees are typically small, distance proxies for information asymmetries and other non-standard costs.[15] The coefficients on population are significantly positive illustrating that larger countries import and export more bank capital. The estimates also show that larger in terms of land area countries export less capital, most likely because big countries have more internal diversification opportunities. The most interesting result is the positive and significant coefficient on GDP per capita in the recipient country. This illustrates the Lucas paradox that bank capital tends to flow to rich, not poor, countries. This result is in line with studies that examine other types of capital in alternative samples (e.g. Portes and Rey, 2005; Wei, 2000a).

Column (2) adds the (lagged) ICRG composite institutional index. The coefficient on $INST_{j,t-1}$ is 0.083 and more than four standard errors above zero. The estimate implies that a 10 point increase in institutional quality is associated with an 8.3% increase in bank inflows. Model (3) adds a vector of source-country time-specific fixed-effects ($\alpha_{i,t}$) to control for time-varying "push" factors. This is important, since previous work has shown that macroeconomic conditions in the industrial world is a major factor driving capital flows in the developing world (e.g. Frankel and Roubini, 2001).[16] The coefficient on the political risk measure retains its significance and is virtually unaffected.

In column (4) I control for time-invariant characteristics adding source-country and recipient-country fixed-effects. Model (5) besides recipient-country fixed-effects (α_j) also includes source-country time-specific fixed-effects ($\alpha_{i,t}$). Model (6) isolates the within country variation, accounting jointly for source-country time-specific fixed-effects ($\alpha_{i,t}$) and country-pair fixed-effects ($\alpha_{i,j}$). Accounting for country-pair fixed effects is important, since distance and ethno-linguistic ties might not fully capture trust and social linkages that affect bilateral financial linkages (see Ekinki, *et al.* 2007; Guiso *et al.* 2007). In all specifications the coefficient on the composite institutional index retains its statistical significance at the 1% level. The estimate has also doubled (0.195) implying a large economic effect. The inter-

[15] Portes and Rey (2005) show that when other factors that more directly capture information costs (telephone traffic, foreign newspapers sales) enter an equity flows gravity models, the coefficient of distance decreases substantially (although it remains negative and significant). Distance might also be capturing part of the effect of trade on capital flows (Aviat and Coeurdacier, 2007).

[16] Frankel and Roubini (2001) summarize that "*..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.*" In line with this in unreported models I find that high interest rates in the source countries have a negative impact on cross-border lending.

pretation of the "within" estimate is different from models (2)-(3) that primarily relied on the cross-country variation. The estimate in the preferred specification (6) suggests that in a country that improves its institutional environment by 5 points, foreign bank inflows increase by 10%. Such improvements are not rare. For example Indonesia experienced a substantial decline in political risk in $1990-1991$, after implementing significant decentralization reforms. The $INST$ index reflected these changes and jumped from 44 in the first quarter of 1990 to 58 in the first quarter of 1991. Political risk also declines after successful democratizations. For example South Africa experienced a significant improvement in the political risk measure after the 1994 elections that ended the "apartheid". Likewise in Chile the institutional index increased by $5-6$ points when Pinochet was removed from power. Furthermore Perotti and Van Oijen (2001) show that the composite institutional measure increases after privatizations by approximately $3\%-4\%$. The within estimates in models (4)-(6) suggest that such reforms are followed by increased foreign bank lending.

3.1.2 Sensitivity

Political, Economic and Financial Risk Table 2 explores the robustness of the results. Columns (1)-(4) report estimates controlling for the two alternative ICRG risk measures. There is a significant correlation between "political", "economic" and "financial" risk (0.69 and 0.63, respectively; see Supplementary Appendix Table 2-Panel A); this raises a concern that the previous estimates capture macroeconomic, monetary and financial developments rather than institutional quality.[17] In addition using the financial and economic risk ratings enables to account with a single measure for macroeconomic and financial conditions that appear insignificant when added in the regression.[18]

In column (1) I augment the country-pair fixed-effect model with the economic risk rating. The coefficient on economic risk is positive and significant. Yet the estimate (0.125) is smaller than the analogous specification with political risk (in Table 1, column (6)). In model (2) I also add the political risk measure. The coefficient on the composite institutional measure somewhat drops from 0.19 to 0.17, but retains its statistical significance at the 1% level. In contrast, the estimate on the economic risk rating drops considerably (from 0.125 to 0.77),

[17] 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.

[18] I estimated models with various macroeconomic controls, such as GDP growth, interest rates, inflation, current account. These variables usually enter with insignificant coefficients. Even in the specifications that these variables enter significantly, the coefficient on institutions (and the other controls) is unaffected.

although it remains significant at standard confidence level. Financial risk also enters with a positive and significant estimate. Yet the estimate in model (3) is smaller (0.11) than the analogous model with political risk. In model (4) I control jointly for political and financial risk. The results show that the effect of institutional quality on bank flows remains significant at the 1% level, while the impact of financial risk drops by a half and is significant just at the 10%. These results should be, however, interpreted cautiously, since multi-collinearity is a concern. Yet the effect of institutional quality in cross-border bank lending seems to work independently of financial and economic risk factors.

OECD and non-OECD countries A concern regarding most empirical analyses examining the effect of institutions is whether the estimates are driven by the substantial variability between rich and non-developed countries. This is because institutions are strongly correlated with other, difficult to observe, factors that distinguish industrial from underdeveloped countries and may thus capture part of their effect. While the fixed-effect estimates address this critique by investigating the effect of institutional reforms on changes in international bank lending, I re-estimate the model separately in advanced economies and in medium and low income countries.

Table 2 columns (5) and (6) report the results when I restrict estimation in the high-income OECD economies and the rest of the world, respectively. While the number of country observations is small (21 OECD and 29 non-OECD countries), the coefficients are precisely estimated, since the fixed-effect models utilize the time-series dimension (75 quarters spanning 19 years).There is a strong within correlation between bank flows and institutional quality in both groups of countries. The estimates are significant at the 1% level and very close to the (more efficient) estimates in the full sample.

3.2 Fixed-effect estimates in the enlarged sample

In Table 3 I examine the effect of institutional quality on international bank lending using an enlarged BIS dataset of annual flows that covers up to 140 countries. In all models besides country fixed-effects, I also account for general trends in capital flows and institutional quality, adding year fixed-effects. Standard errors adjusted for clustered at the country-level heteroskedasticity and autocorrelation are reported below the estimates.

Model (1) explores the unconditional impact of institutions on bank flows. The coefficient

is significant at the 1% confidence level. The estimate (0.27) implies that a 5 point decline in political risk in a reforming country (e.g. Argentina in the mid-eighties) is associated with a $13\% - 14\%$ increase in international lending flows. Model (2) shows that the effect of institutional quality in driving foreign bank capital is unaffected by income and population. The coefficient on $INST_{j,t-1}$ is quite stable, when we control for ICRG's economic risk rating (in column (3)). The coefficient on the institutional index turns however (marginally) insignificant (t-stat: 1.54) once we control for financial risk in model (4). Yet due to the strong correlation between political risk and financial risk (0.82; see Supplementary Appendix Table 2-Panel B), multi-collinearity makes it really hard to isolate the effect of the two risk characteristics. Thus to further control for hard-to-account-for differences in economic and financial conditions in columns (5) and (6) I run the models separately to the high-income OECD sample and the rest of the world. The within effect of institutional (political) risk in driving foreign bank flows is significant in both samples. The estimates also hint that institutional improvements have a larger effect in advanced economies than the developing world (0.89 versus 0.23). This is most likely because OECD economies have also other complementary to capital factors, while medium and low income countries lack a skilled-labor workforce, have heavily distorted markets, impose capital controls, etc.

4 Cross-sectional approaches

While the fixed-effect models account for time-invariant country characteristics that may influence foreign investment, they are not a panacea, since reverse causation and measurement error might still plague the estimates. First, foreign banks push (directly and via their governments) countries to implement reforms. Second, risk agencies construct the various institutional proxies after observing foreign investment. Thus they might assign a higher rating to a country that has received a lot of foreign capital to please their customers (banks and large institutional investors) or because they believe that political risk has declined. Third, foreign banks might increase lending in anticipation of future institutional reforms. Fourth, institutional quality is measured with noise (since it is impossible to summarize in a single variable all dimensions of the institutional environment) and thus the estimates may be attenuated. This problem is magnified in fixed-effect models, since mean (or first) differencing removes a significant part of the variation in institutional quality, increasing the signal-to-noise ratio (e.g. Griliches and Hausman, 1986). Given these possibilities the fixed-

effect estimates might be biased either upwards or downwards. In the presence of reverse causality (first and second scenario) the previous estimates will be inflated, while if measurement error dominates or if foreign banks start investing before the institutional improvement (third and fourth scenario) then the estimates will be attenuated. In this Section I try to circumvent these caveats using cross-sectional approaches with predetermined values of the explanatory variables and instrumental variable techniques that directly tackle endogeneity.

4.1 "Between" estimates

Table 4 columns (1)-(6) report "between" estimates. This method removes the time series dimension by using mean values of the dependent and explanatory variables. Model (1) reports the unconditional regression coefficient in the maximum number of countries. Compared to analogous "within" model (in Table 3; column (1)) the coefficient on institutional quality has increased to 0.42. The estimate is significant at the 1% confidence level. The R^2 has also jumped; we can explain more than 40% of the overall variation in international bank lending just with the institutions measure. The coefficient retains significance when we control for income and population (in column (2)), economic risk (in column (3)) and financial risk (in column (4)). This suggests that the significant institutions-bank inflows relationship is not capturing the overall stage of development.

Low levels of human capital reduce the return to capital and may thus block foreign investment (Lucas, 1990). To account for human capital differences in column (5) I augment the specification with average years of schooling (using data from Barro-Lee, 2001). The coefficient on institutional quality retains its statistical and economic significance, while education enters with an insignificant estimate. Alsan *et al.* (2004) argue that life expectancy captures labor productivity more adequately than education. They also show that health is a significant correlate of FDI. In model (6) I add life expectancy in the set of explanatory variables (using data from World Bank's World Development Indicators database). The coefficient on $INST$ remains stable, suggesting that the previous estimates were not driven by human capital differences.

In columns (7)-(12) I repeat estimation using initial (in 1984) values of political risk and the other controls. While the sample drops (to $80-85$ countries) using predetermined values helps assuage reverse causality. Capital flows in the early eighties and the seventies were quite small, so it is unlikely that they affected institutional quality in 1984. In all

permutations the coefficient on political risk remains statistically significant, while income and the other controls all enter with insignificant coefficients. The economic effect of initial institutional quality is explaining future international bank flows is large. The estimates in specifications (7)-(12) imply that a ten point increase in average institutional quality (for example between Chile and Bolivia) is associated with an increased lending of 30%.

4.2 Endogeneity and Measurement Error

While using initial values moderates reverse causation, to fully account for endogeneity and identify the one-way effect of institutional quality on international bank flows one needs proper instruments to obtain exogenous variation in institutional performance. In Table 5 I thus report instrumental variable models using two different instrumentation strategies, which follow the literature on the effect of institutions in development. To maximize coverage I do two small perturbations. First, I use values in 1985 (and consequently annual net average bank flows over the $1985-2002$ period). Second, I use an earlier version of the ICRG political risk database (IQL; this series and its subcomponents were retrieved from Knack and Keefer, 1995, and Knack, 2000). These small changes increase the sample by $30\% - 40\%$.[19]

Legal origin La Porta *et al.* (1997, 1998, 1999) argue that the origin of a country's legal system had long-standing consequences in contractual institutions. La Porta *et al.* show that investor's protection, court efficiency, and legal formalism differ systematically between legal families. English-originated common law countries protect creditors and shareholders on average better than countries of the civil law tradition, and especially French-origin legal systems (La Porta *et al.* 2007 review the theory and empirical findings on legal origins). Since legal origin was imposed by colonizers during the 18th-19th century, it can be though as "exogenous" to contemporary institutions.[20]

In Table 5 column (1) I use legal origin as an instrument of institutional quality. Panel A

[19] The correlation of the political risk rating used in previous Tables and the old version of the ICRG index obtained from Knack and Keefer is 0.96 (see Supplementary Appendix Table 2-Panel C). The country sample increases from 85 to 121, when I use the older version of the ICRG institutional quality index from Knack and Keefer (1995).

[20] While the literature has not settled down on the exact mechanisms of legal origin's impact, the debate mainly regards whether legal origin affected political institutions, legal efficiency, or regulatory practices. Since I am using a composite measure of institutional quality that blends property rights protection, rule of law, bureaucratic quality, the fact that legal origin might affect differently these institutional structures is not a big concern.

reports the second stage LS results, while Panel B gives the corresponding first stage. There is a strong relationship between legal origin and institutional quality. The F-statistic of legal origin is 12.23 (reported in Panel E), exceeding the rule-of-thumb threshold of ten to avoid weak instrument concerns (e.g. Staiger and Stock, 1997). The second stage coefficient on institutional quality is statistically significant at the 1% level, illustrating that the component of institutional quality determined by legal transplantation is a significant predictor of bank lending. The IV estimate is larger than the OLS estimates (reported in Panel C). This suggests that the cross-sectional estimates (in Table 4) were conservative due to attenuation rather than inflated due to reverse causation. In column (2) I add log GDP per capita in 1985 as a control. The first-stage fit falls $[F - score = 8.4]$ since income is positively correlated with both legal origin and institutional quality. The estimates are most likely inefficient, since income enters the second stage with an insignificant coefficient, while at the same time it takes away a sizable part of instrument's power. Yet the 2SLS coefficient on institutional quality retains significance at the 1%.

Type of colonization Acemoglu *et al.* (2001, 2002) argue that the type of colonization (rather than the identity of the colonizer) had a big impact on institutional development.[21] Acemoglu *et al.* present evidence that Europeans built small settler communities and established coercive institutions in colonies with hostile living conditions (due to malaria and yellow fever) and regions that were densely populated (because it was easier to capture the local population). In contrast in regions where health conditions were favorable and not densely populated, the colonizers set up large communities and transplanted European institutions that protected property rights. Due to persistence "early" colonial institutions influenced to a large extent contemporary institutions. Building on this theory in model (3) I use the (log of) population density around 1500 as an instrument for institutional quality. The sample drops by 30%, since population density is available for a subset of countries. In line with Acemoglu *et al.* (2002) one can explain 30% of the overall variability in institutional quality with log population density. The second stage coefficient on IQL is statistically significant at the 5% and economically large (0.46). As with legal origin this instrumentation strategy also suggests that the historically predetermined component of institutional effi-

[21] Yet this does not necessarily imply that the identity of the colonizer did not have an effect. For example Acemoglu and Johnson (2005) show that legal origin has a first-order effect on contractual institutions.

ciency has a positive impact in explaining foreign bank flows.[22] In model (4) I add log GDP per capita in the RHS. While the second stage estimate on institutional quality is stable (0.42), the standard error increases, making the estimate insignificant. Yet this model is not well-specified, since income while insignificant, worsens the power of the first-stage fit (the F-score of the instrument significance drops from 27.6 to 6.9).

Legal origin and population density before colonization Columns (5)-(6) report IV models using both legal origin and population density in 1500 as instruments for institutional development. This approach is the most efficient, since it helps obtain a stronger first stage fit and more properly isolate the exogenous component of institutions. It is also helpful, since having more than one instruments, one can test for instrument validity performing. The p-values of the Sargan-Hansen J-test of over-identifying restrictions (0.43 and 0.25) suggest that we can not reject the null hypothesis of instrument validity. This also supports the evidence in columns (1)-(4). The first stage results show that legal origin and log population density in 1500 are both significant correlates of institutional quality (suggesting that both theoretical arguments are empirically relevant). The IV estimate in column (5) in 0.53 and significant at the 1% confidence level. In model (6) I control for income. As in models (2) and (4) these estimates are not efficient, since GDP is insignificant in the second stage and absorbs a big part of the power of the instruments in the first stage. The second stage coefficient on institutional quality remains quantitatively large and is significantly different than zero at the 5% level.[23]

LIML estimates I also re-estimated the IV models with three alternative limited-information maximum likelihood (LIML) methods that perform better than two-stage least squares when instruments are weak (e.g. Stock, Wright and Yogo, 2002; Hahn and Hausman, 2003). Panel D reports the results. The first row reports LIML estimates that are asymptotically better in the presence of more than one exogenous variable (as in (5)-(6)). These estimates are almost identical to the ones obtained with two-stage-least squares. The second and third row report

[22] The results are similar when I use log settler mortality as an instrument for institutions. The second stage estimate on institutions is 0.755 (s.e.= 0.305). I use population density since the sample is somewhat larger (76 instead of 67 countries) and because the first stage fit in my sample is slightly stronger.

[23] In unreported models I also used ethnic and/or religious polarization as instruments for institutional quality (using data from Montalvo and Reynal-Querol, 2005). This approach follows recent theories (e.g. Aghion, Alesina, and Trebbi, 2005) that link polarization with weak institutional performance. In line with the results in Table 5 the second-stage coefficient of institutional quality retains economic and statistical significance in explaining future bank lending.

Fuller LIML estimates using constants of 1 and 4 respectively. Fuller LIML with a constant of 1 is the best unbiased estimator, while when the constant is 4 the procedure minimizes the mean squared error of the estimator (Fuller, 1977). The estimates with the Fuller LIML methods are somewhat smaller to the corresponding 2SLS coefficients, but more precisely estimated. In all specifications, but model (4), the IV coefficient on institutions is positive and significant at standard confidence levels. The preferred model (5), where I employ both legal origin and log population density before colonization to isolate the exogenous effect of institutions implies that a 10 point improvement in institutional performance is followed by a 50% increase in bank inflows. The IV estimates in the maximum sample of countries in model (1) imply an effect of $60\% - 70\%$.

4.3 Unbundling

The analysis so far does not address which institutional features drive foreign bank flows. Is it for example corruption the key impediment to foreign bank inflows? Or is it weak investors rights that blocks international lending? While it is important for theory and policy advice which institutions attract international capital, research has not tackled this question, since it is challenging to unbundle institutional performance. First, there is a big overlap between sound investor protection, lack of corruption, and bureaucratic quality making it hard to identify the idiosyncratic component of these features (especially working with $50 - 100$ countries). Second, the available institutional indicators are usually outcome measures weakly related to the underlying institutional structures (Glaeser *et al.* 2004). Third the indicators do not usually map the theoretical concepts one would ideally want to measure (Acemoglu and Johnson, 2005). Fourth, measurement error is most likely correlated among the various proxies blurring any real differences across institutional performance.

In spite of these drawbacks, before concluding, it is worthwhile to detect which components of the aggregate institutional quality variable is the most significant correlate of international bank flows. Table 6 reports results using the six sub-indicators of the composite ICRG index, controlling for income and population. To enable comparability I standardize all measures to range between $0 - 100$ -where higher values denote better functioning institutions- and also report estimates with the composite measure(in column (1)).[24]

[24]Note that the estimate in model (1) is very similar to the results in Table 4 where I used the slightly different ICRG measure (which was available for 85 countries).

In model (2) I use the protection against corruption index [$CORRUPT$]. The coefficient on corruption is statistically insignificant at standard confidence levels, hinting that while corruption may be an important impediment for foreign direct investment, it is of secondary importance in attracting foreign bank capital. This result is in line with the evidence provided by Wei (2000b) and Wei and Wu (2002), who show that corruption tilts the composition of capital inflows from FDI to bank lending. FDI investors have to obtain licenses, permissions, and authorizations to build and operate plant, interacting constantly with corrupt officials. Thus corruption has a first-order effect on FDI (e.g. Wei, 2000a). In contrast international banks can bypass a corrupt bureaucracy by lending to the domestic banking system and big corporations. In addition the lack of FDI in corrupt countries increases the need for bank financing and may thus increase rather than block foreign bank capital. The "composition" effect may also explain the insignificant effect of bureaucratic quality in international bank lending index shown in model (3). While the quality of the bureaucracy is important for direct investment, international bank lending does not usually involve dealing with government officials. Thus the impact of bureaucratic quality and corruption is small for foreign bank lending.

In model (4) I add in the specification the ethnic tensions [$ETHTENS$] index that measures the degree of government intolerance to racial and national minorities. The coefficient on $ETHTENS$ is insignificant, hinting that foreign bank lending is not affected by such conflict.

Model (5) adds a rule of law index [$RLAW$] that is based on PRS assessment of government accountability, court efficiency, and political order. The estimate is 0.16 and significant at the 5% level. This shows that the legal and political environment is important for foreign banks. Model (6) uses the risk of repudiation of contracts index [$CREPUD$]. A priori one should expect this measure to be a significant correlate of foreign bank lending, since it measures "the possibility that foreign businesses, contractors, and consultants face the risk of a modification in a contract taking the form of repudiation and postponement" (ICRG). This appears to be the case. The coefficient on $CREPUD$ is the largest of all the subcomponents (0.26) and is significant at the 1% level. In model (7) I add the risk of expropriation index [$EXPRISK$] that measures the likelihood of property confiscation and forced nationalization. The coefficient estimate is 0.17 and significant at the 90% level.

While it is useful to identify which components of the aggregate measure correlate with

future bank lending, this "unbundling" procedure is not ideal, since it is not crystal clear what exactly the three significant variables (rule of law, risk of expropriation, and risk of contract repudiation) exactly capture. Yet the results hint that corruption, bureaucratic quality, and ethnic tensions are of secondary importance for foreign bank lending. The results imply that the key impediment to foreign bank lending is a high risk of expropriation from the government and a significant likelihood that due to legal system inefficiencies the borrower will repudiate the international loan contract.[25]

5 Conclusion

This paper studies the determinants of international financial flows from banks in a large panel of countries and years, trying to shed light to the Lucas (1990) paradox on "*why doesn't (bank) capital flow from rich to poor countries*". The results suggest that poorly performing institutions, such as weak protection of property rights, legal inefficiency, and a high risk of expropriation are major impediments to foreign bank capital.

The analysis is carried with panel and cross-sectional methods. First, I utilize the time-variation in bank lending and institutional quality estimating fixed-effect models that account for (to a first approximation) time-invariant country unobservable characteristics, such as trust, social capital, and geography, that may affect both foreign lending and institutions. The "*within*" estimates suggest that political liberalizations, privatization and other structural policies enable the economy to attract substantially more foreign bank capital. Second, I estimate cross-sectional models using predetermined values of institutional quality to account for reverse feedback of international lending on institutional quality. The results suggest that institutional quality rather than income or human capital is the key correlate of bank lending. Third, to tackle endogeneity and account for measurement error in the institutional proxies, I estimate instrumental variable models using legal origin (following La Porta *et al.* 1998) and population density before colonization (following Acemoglu *et al.* 2002) to extract the historically predetermined component of institutions on foreign bank flows. The IV estimates imply a highly significant and economically sizable effect of institutional perfor-

[25] In unreported models I also followed the approach of Acemoglu and Johnson (2005) and distinguished between property rights and contractual institutions using their preferred measures. I found that both institutional types are significant correlates of bank flows. Since there are numerous ways to un-cluster institutional performance, I leave for future work a systematic analysis of the effect of specific institutions in international capital movements.

mance on foreign bank lending. Fourth, I use the components of the aggregate institutional index in an effort to identify which exactly institutional features correlate with foreign bank lending. The models suggest that property rights and legal institutions that protect foreign investors against expropriation and contract repudiation are the most significant correlates of future bank lending.

The results call for additional research. 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 an ingredient of new theoretical effort to analyze cross-border capital movements.

A Data Appendix

A.1 Country-pair sample countries

Source-Reporting countries (19): Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal (start 1997 q4), Spain, Sweden, Switzerland, United Kingdom, United States, Japan, Canada, Australia

Recipient countries (50): Argentina, Australia, Austria, Belgium, Bulgaria, Brazil, Botswana, Canada, Switzerland, Chile, China, Colombia, Costa Rica, Czech Republic, Germany, Denmark, Ecuador, Spain, Estonia, Finland, France, United Kingdom, Croatia, Hungary, Indonesia, Ireland, Israel, Italy, Jordan, Japan, Korea, Republic of, Lithuania, Latvia, Mexico, Malaysia, Namibia, Netherlands, Norway, New Zealand, Peru, Philippines, Poland, Portugal, Romania, Slovak Republic, Slovenia, Sweden, Tunisia, Turkey, United States, South Africa.

A.2 Enlarged Sample Countries

Recipient countries (140): Angola, Albania, United Arab Emirates, Argentina, Armenia, Australia, Austria, Azerbaijan, Belgium, Burkina Faso, Bangladesh, Bulgaria, Bahrain, Bahamas, Belarus, Bolivia, Brazil, Brunei, Botswana, Canada, Switzerland, Chile, China, Côte d'Ivoire, Cameroon, Congo, Rep., Colombia, Costa Rica, Cuba, Cyprus, Czech Republic, Germany, Denmark, Dominican Republic, Algeria, Ecuador, Egypt, Spain, Estonia, Ethiopia, Finland, France, Gabon, United Kingdom, Ghana, Guinea, Gambia, Guinea-Bissau, Greece, Guatemala, Guyana, Hong Kong, Honduras, Croatia, Haiti, Hungary, Indonesia , India, Ireland, Iran, Iraq, Iceland, Israel, Italy, Jamaica, Jordan, Japan, Kazakhstan, Kenya, Korea, Rep., Kuwait, Lebanon, Liberia, Libya, Sri Lanka, Lithuania, Luxembourg, Latvia, Morocco, Moldova, Madagascar, Mexico, Mali, Malta, Myanmar, Mongolia, Mozambique, Malawi, Malaysia, Namibia, New Caledonia, Niger, Nigeria, Nicaragua, Netherlands, Norway, New Zealand, Oman, Pakistan, Panama, Peru, Philippines, Papua New Guinea, Poland, Korea, Dem. Rep., Portugal, Paraguay, Qatar, Romania, Russian Federation, Saudi Arabia, Sudan, Senegal, Singapore, Sierra Leone, El Salvador, Somalia, Suriname, Slovak Republic, Slovenia, Sweden, Syrian Arab Republic, Togo, Thailand, Trinidad and Tobago, Tunisia, Turkey, Taiwan, Tanzania, Uganda, Ukraine, Uruguay, United States, Venezuela, Vietnam, Yemen, South Africa, Congo, Dem. Rep., Zambia, Zimbabwe.

A.3 Institutional Quality and Risk Characteristics Data

Political Risk [$INST$]**:** The Political Risk index ranges from 0 denoting minimum institutional quality to 100 indicating a total absence of political risk. It is an aggregate of (components and weights). (1) : Government stability, which includes government unity, legislative strength, and 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 (Rule of Law) (8%). (10) : Ethnic tensions (8%). (11) : Democratic accountability (8%). (12) : Bureaucracy quality (4%).

Economic Risk [$ECON\_RISK$]**:** The rating is a composite of (components and weights): (1) : GDP per capita (10%). (2) : Real GDP growth (20%). (3) : Inflation (20%). (4) : Budget balance as a percentage of GDP (20%). (5) : Current Account balance as a Percentage of GDP (30%). The index ranges from 0 to 50 with lower values indicating higher risk. The variable is rescaled to a $0-100$ range.

Financial Risk [FIN_RISK]**:** The rating is a composite of (components and weights). (1) :Foreign debt as a percentage of GDP (20%). (2) : Foreign debt service as a percentage of exports (20%). (3) : Current account as a percentage of exports (30%). (4) : Net liquidity as months of import cover (10%). (5) : Exchange rate stability (20%). The index ranges from 0 to 50 with lower values indicating higher financial risk. The variable is rescaled to a $0-100$ range.

Institutional Quality [IQL]: A $0-100$ range index, where higher values indicate higher quality institutional capacity based on earlier versions of the ICRG political risk index. The measure is an average of six sub-indicators (to enable comparability all sub-indicators are rescaled to a $0-100$ range, where higher values indicate higher quality institutional quality).:

1) Corruption in Government [$CORRUPT$]: A $0-6$ index where lower scores indicate that "high government officials are likely to demand special payments and that illegal payments are generally expected throughout lower levels of government in the form of bribes connected with import and export licenses, exchange controls, tax assessment, police

protection, or loans."

2) Quality of the Bureaucracy [BQL]: A $0-6$ index where high scores indicate "an established mechanism for recruitment and training, autonomy from political pressure, and strength and expertise to govern without drastic changes in policy or interruptions in government services when governments change."

3) Ethnic Tensions [$ETHTENS$]: A $0-6$ index where "lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise. Higher ratings are given to countries where tensions are minimal, even though such differences may still exist."

4) Rule of Law [$RLAW$]: A $0-6$ index where "higher scores indicate sound political institutions, a strong court system, and provisions for an orderly succession of power. Lower scores indicate a tradition of depending on physical force or illegal means to settle claims."

5) Risk of Repudiation of Contracts by Government [$CREPUD$]: A $0-10$ index that measures "the possibility that foreign businesses, contractors, and consultants face the risk of a modification in a contract taking the form of repudiation and postponement. Lower scores signify a greater likelihood that a country will modify or repudiate a contract with a foreign business."

6) Risk of Expropriation of Private Investment [$EXPRISK$]: The $0-10$ index measures the risk of confiscation and forced nationalization of property. Lower ratings indicate a higher likelihood of expropriation of private foreign investment.

Source: Knack and Keefer (1995) and Knack (2000); Center of Institutional Reform and the Informal Sector at the University of Maryland. Original Source: PRS ICRG. For a complete documentation see http://ssdc.ucsd.edu/ssdc/pdf/IRIS_doc.pdf.

A.4 Other Controls

A.4.1 Country-Pair Estimates (Tables 1-2)

Ethnolinguistic Ties [$TIE_{i,j}$]: Dummy variable that equals one if the two countries share a common language or have former colonial relation. Source: Glick and Rose (2002).

Log Distance [$DIST_{i,j}$]: Natural logarithm of greater circle distance between economic centres in a pair of countries. Source: Glick and Rose (2002).

Log Area [$AREA$]: Natural logarithm of land area in square kilometers. Source: Glick and Rose (2002).

Log Population [POP]: Values correspond to mid-year estimates. A linear interpolation is used to fill in missing observations. Source: IMF IFS [line 99Z.].

Log Income [Y]: Logarithm of GDP per capita volume, converted to US dollars and adjusted with local CPI. Source: IMF IFS [line 99B].

A.4.2 Enlarged Dataset (Tables 3-6)

Schooling [SCH]**:** Average years of schooling in the population aged 25 and above. The variables are available every 5 years (1985, 1990, 1995, 2000). A linear interpolation was used to achieve yearly variability. In the cross-sectional estimates the 1985 value is used. Source: Barro and Lee (2001) [variable "tyr"].

Life Expectancy [$LIFEXP$]**:** Number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same. The series has some arbitrary gaps. A linear interpolation was applied to fill in missing observations. Source: WB-WDI 2005 [series: NY.GDP.PCAP.KD].

Legal Origin [$LEGOR\_FR$]: Dummy variable that equals one if the legal system has been influenced by the French civil code and legal tradition. Source: La Porta *et al.* (1999).

Log Density1500 [$PDENS$]: Log of Population density in 1500. Source: Glaeser *et al.* (2004); original source: Acemoglu, Johnson, and Robinson (2002).

Log Population [POP]: Values correspond to mid-year estimates. Source: WB-WDI Database 2005 [series: SP.POP.TOTL].

Log Income [Y]: Natural logarithm of real GDP per capita at constant 2000 US dollars. Source: WB-WDI 2005 [series: NY.GDP.PCAP.KD].

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Table 1: Country Pair Panel Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
ln $Y_{i,t}$	-0.1620	-0.2925	__	-0.0912	__	__
Log Income "source"	(0.1535)	(0.1490)		(0.2606)		
ln $Y_{,j,t}$	0.2795**	0.0711	0.0732	0.4434*	0.4524*	0.4625*
Log Income "recipient"	(0.0832)	(0.0837)	(0.0879)	(0.1835)	(0.1826)	(0.1778)
ln $POP_{i,t}$	0.7381***	0.7789***	__	12.8198***	__	__
Log Population "source"	(0.1241)	(0.1233)		(3.4852)		
ln $POP_{,j,t}$	0.4569**	0.7336***	0.7275***	-0.582	0.0576	-0.1334
Log Population "recipient"	(0.1369)	(0.1278)	(0.1276)	(4.0539)	(4.1233)	(4.1807)
ln $AREA_{i,t}$	-0.2117**	-0.2473**	__	__	__	__
Log Land Area "source"	(0.0765)	(0.0795)				
ln $AREA_{,j,t}$	0.0568	0.0027	-0.0020	__	__	__
Log Land Area "recipient"	(0.1224)	(0.1184)	(0.1176)			
$TIE_{i,j}$	0.2475	0.3345	0.2212	0.3155	0.3121	__
Ethnolinguistic Ties	(0.3893)	(0.3740)	(0.3951)	(0.3826)	(0.3822)	
ln $DIST_{i,j}$	-1.1337***	-0.8305***	-0.8187***	-0.9423***	-0.9638***	__
Log Distance	(0.1447)	(0.1605)	(0.1601)	(0.2181)	(0.2201)	
$INST_{j,t-1}$		0.0826***	0.0842***	0.1963***	0.1924***	0.1919***
Laged Institutions-Political Risk		(0.0182)	(0.0182)	(0.0310)	(0.0319)	(0.0324)
Adjusted R-squared	0.014	0.016	0.045	0.023	0.049	0.048
Observations	38688	37731	39013	37871	39153	39153
Source Countries	19	19	19	19	19	19
Recipient Countries	49	49	49	49	50	50
Time Fixed Effects	Yes	Yes	No	Yes	No	No
Source Country Fixed Effects	No	No	No	Yes	No	No
Recipient Country Fixed Effects	No	No	No	Yes	Yes	No
Source Country Time Fixed Effects	No	No	Yes	No	Yes	Yes
Country-Pair Fixed Effects	No	No	No	No	Yes	Yes

The dependent variable is the natural logarithm of real bank flows from country i (source country) to county j (recipient country) in quarter t. The data covers quarterly financial flows from banks located in 19 source countries to all sectors in 50 recipient countries in the 1984-2002 period. Absolute values of heteroskedasticity and autocorrelation adjusted standard errors clustered at the recipient country are given in parenthesis below the coefficients. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

Y denotes real GDP per capita. POP denotes total population. $AREA$ denotes the land area (in square kilometers). DIST is the geographic distance between source country i and recipient country j. Tie is an indicator variable that equals one if the two countries have colonial or linguistic ties. $INST_{j,t-1}$ is a 0-100 composite index of institutional quality (ICRG political risk index), with higher values indicating higher quality institutional structures (lower political risk). The Data Appendix gives detailed variable definitions and data sources.

Models (1), (2), and (4) include a vector of time (quarter) fixed-effects, while models (3), (5), and (6) include a vector of source-country specific fixed effects. Model (4) also includes a vector of source country fixed-effects and a vector of recipient country fixed-effects. Model (5) also includes a vector of recipient country fixed-effects. Model (6) also includes a vector of country-pair fixed-effects.

Table 2: Sensitivity Checks - Country Pair Panel Estimates

	All Countries				OECD	non-OECD
	(1)	(2)	(3)	(4)	(5)	(6)
ln $Y_{j,t}$	0.5124*	0.4920**	0.6702**	0.5867**	0.6178*	0.4625*
Log Income "recipient"	(0.2001)	(0.1717)	(0.2087)	(0.1717)	(0.2403)	(0.1778)
ln $POP_{j,t}$	4.7953	0.3983	-1.1777	-2.8481	-16.2291	-0.1334
Log Population "recipient"	(4.8452)	(4.3542)	(5.3222)	(4.8518)	(14.1032)	(4.1807)
$ECON\_RISK_{j,t-1}$	0.1253***	0.0776**				
Laged Economic Risk	(0.0239)	(0.0289)				
$FIN\_RISK_{j,t-1}$			0.1113***	0.0672*		
Laged Financial Risk			(0.0264)	(0.0278)		
$INST_{j,t-1}$		0.1676***		0.1542***	0.1571***	0.1919***
Laged Institutions-Political Risk		(0.0352)		(0.0362)	(0.0512)	(0.0324)
"Within" R^2	0.069	0.070	0.069	0.070	0.106	0.123
Overall adjusted R^2	0.047	0.049	0.047	0.049	0.051	0.048
Observations	39153	39153	39153	39153	39153	39153
Source Countries	19	19	19	19	19	19
Recipient Countries	50	50	50	50	21	29
Source Country Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-Pair FE	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable is the natural logarithm of real bank flows from country i (source country) to county j (recipient country) in quarter t. The data covers quarterly financial flows from banks located in 19 source countries to all sectors in 50 recipient countries in the 1984-2002 period. Absolute values of heteroskedasticity and autocorrelation adjusted standard errors clustered at the recipient country are given in parenthesis below the coefficients. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. All models include a vector of source-country specific fixed-effects and a vector of country-pair fixed-effects. Model (5) restricts estimation to high-income OECD countries. Model (6) restricts estimation to non-OECD countries.

Y denotes real GDP per capita. POP denotes total population. $INST_{j,t-1}$ is a 0-100 composite index of institutional quality (ICRG political risk index) , with higher value indicating higher quality institutional structures (lower political risk). $ECON\_RISK_{j,t-1}$ is a-100 measure of economic risk, based on macroeconomic factors (ICRG economic risk), with higher values indicating lower risk. $FIN\_RISK_{j,t-1}$ is a 0-100 measure of financial risk, based on monetary and financial conditions (ICRG financial risk), with higher values indicating lower risk. The Data Appendix gives detailed variable definitions and data sources.

Table 3: Fixed-Effect Estimates in the Enlarged Sample

	All Countries				OECD	non-OECD
	(1)	(2)	(3)	(4)	(5)	(6)
$INST_{j,t-1}$	0.2692***	0.2793***	0.2401***	0.1760	0.8867***	0.2277**
Laged Institutions	(0.0797)	(0.0901)	(0.0904)	(0.1144)	(0.3025)	(0.1024)
ln $POP_{,j,t}$		1.6219	-0.8830	-5.4317	-0.4593	9.0717
Log Population		(9.3753)	(9.5530)	(9.8503)	(51.5513)	(11.4571)
ln $Y_{,j,t}$		3.3299	0.9889	2.1570	14.3872	2.5454
Log Income		(4.0702)	(4.1816)	(4.0545)	(16.8475)	(4.1807)
$ECON\_RISK_{j,t-1}$			0.1898***			
Laged Economic Risk			(0.0608)			
$FIN\_RISK_{j,t-1}$				0.1574**		
Laged Financial Risk				(0.0744)		
"Within" R^2	0.040	0.043	0.050	0.487	0.134	0.043
Overall adjusted R^2	0.165	0.173	0.178	0.177	0.165	0.085
Observations	2262	2101	2101	2101	425	1676
Countries	140	131	131	131	24	107

The dependent variable is the natural logarithm of real bank inflows to county j (recipient country) in year t. The data covers annual financial flows from banks located in 40 countries to all sectors in 140 recipient countries in the 1984-2002 period. Absolute values of heteroskedasticity and autocorrelation adjusted standard errors clustered at the recipient country are given in parenthesis below the coefficients. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. All models include vector of recipient-country fixed effects and a vector of year fixed-effects. Model (5) restricts estimation to high-income OECD countries. Model (6) restricts estimation to non-OECD countries.

Y denotes real GDP per capita. POP denotes total population. $INST_{j,t-1}$ is a 0-100 composite index of institutional quality (ICRG political risk index) , with higher value indicating higher quality institutional structures (lower political risk). $ECON\_RISK_{j,t-1}$ is a-100 measure of economic risk, based on macroeconomic factors (ICRG economic risk), with higher values indicating lower risk. $FIN\_RISK_{j,t-1}$ is a 0-100 measure of financial risk, based on monetary and financial conditions (ICRG financial risk), with higher values indicating lower risk. The Data Appendix gives detailed variable definitions and data sources.

Table 4: Cross-Sectional (Between) Estimates in the Enlarged Sample

	Using average values						Using initial (in 1984) values					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$INST_{j,t-1}$	0.4211***	0.3216***	0.3066***	0.2798***	0.3351***	0.3258***	0.2775***	0.2222***	0.2202***	0.1717*	0.2175***	0.2138***
Laged Institutions	(0.0419)	(0.0716)	(0.0730)	(0.1030)	(0.0970)	(0.0751)	(0.0332)	(0.0552)	(0.0579)	(0.0923)	(0.0636)	(0.0556)
ln $POP_{,j,t}$		0.2571	0.2289	0.1870	0.7330	0.2746		1.1712**	1.1711**	1.1556**	1.1204**	1.1491**
Log Population		(0.3740)	(0.3748)	(0.3950)	(0.4535)	(0.3897)		(0.5184)	(0.5218)	(0.5207)	(0.5390)	(0.5177)
ln $Y_{,j,t}$		1.4019**	0.9840	1.2218*	1.9766*	1.3987		1.2333	1.1956	1.0884	1.1745*	0.3055
Log Income		(0.6098)	(0.7262)	(0.6894)	(1.0714)	(0.8486)		(0.7407)	(0.8059)	(0.7728)	(1.0422)	(1.0950)
$ECON\_RISK_{j,t-1}$			0.0876						0.0082			
Laged Economic Risk			(0.0828)						(0.0665)			
$FIN\_RISK_{j,t-1}$				0.0586						0.0664		
Laged Financial Risk				(0.1035)						(0.0969)		
$SCH_{j,t}$					-0.6341626						-0.3459	
Schooling					(0.5379)						(0.5544)	
$LIFEXP_{j,t}$						-0.0050						0.1949
Life Expectancy						(0.1009)						(0.1697)
"Between" R^2	0.423	0.467	0.472	0.468	0.492	0.467	0.457	0.505	0.505	0.508	0.506	0.514
Observations	2262	2101	2101	2101	1604	2092	1600	1505	1505	1505	1410	1505
Countries	140	131	131	131	91	130	85	80	80	80	75	80

The dependent variable is the natural logarithm of real bank inflows to county j (recipient country) in year t. The data covers annual financial flows from banks located in 40 countries to all sectors in 140 recipient countries in the 1984-2002 period. Absolute values of standard errors are given in parenthesis below the coefficients. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively. The Table reports panel "between" estimates. Models (1)-(6) use mean values of the independent variables, while models (7)-(12) use initial-predetermined (in 1984) values of the independent variables. The Data Appendix gives detailed variable definitions and data sources.

Table 5: Instrumental Variables

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Second Stage Results						
$IQL_{,j,85}$	0.7155***	1.0009**	0.4584**	0.4208	0.5276***	0.7847**
Institutional Quality	(0.2544)	(0.4789)	(0.1908)	(0.5698)	(0.1662)	(0.3964)
ln $POP_{,j,85}$	0.0474	-0.7266	0.0172	-0.1888	0.0245	-0.5687
Log Population	(0.9227)	(1.5880)	(1.3871)	(1.5658)	(1.4058)	(1.5556)
ln $Y_{,j,85}$		-4.2336		0.4899		-2.2802
Log Income		(4.7123)		(4.6797)		(3.6474)
Panel B: First Stage Results						
$LEGOR\_FR_j$	-12.4573***	-7.7419***			-6.3245**	-7.0476**
French Legal Origin	(3.5627)	(2.6737)			(3.1661)	(3.0643)
ln $PDENS_j$			-5.8949***	-2.8297**	-5.6865***	-2.6948**
Log Population Density in 1500			(1.1213)	(1.0776)	(1.0558)	(1.1463)
ln $POP_{,j,85}$		2.0902**		1.4561		1.3268
Log Population		(0.8660)		(1.0322)		(0.9757)
ln $Y_{,j,85}$		9.1000***		5.6605***		5.5767***
Log Income		(0.9404)		(1.4219)		(1.4783)
Panel C: OLS Estimates on Institutional Quality Index						
$IQL_{,j,85}$	0.3991***	0.2473**	0.2960***	0.2042	0.2960***	0.2042
Institutional Quality	(0.0534)	(0.1016)	(0.1045)	(0.1454)	(0.1045)	(0.1454)
Panel D: LIML Estimates on Institutional Quality Index						
LIML	0.7155***	1.0009**	0.4584**	0.4208	0.5361***	0.8267*
	(0.2544)	(0.4789)	(0.1908)	(0.5698)	(0.1702)	(0.4239)
Fuller LIML (k=1)	0.6891***	0.9125**	0.4514**	0.3829	0.5266***	0.7620**
	(0.2326)	(0.4125)	(0.1853)	(0.4764)	(0.1657)	(0.3819)
Fuller LIML (k=4)	0.6294***	0.7344**	0.4327**	0.3188	0.5008***	0.6231**
	(0.1854)	(0.2926)	(0.1705)	(0.3198)	(0.1538)	(0.2968)
Panel E: Diagnostics						
Partial R-squared	0.094	0.072	0.309	0.069	0.345	0.142
F-test excluded restrictions	12.23 [0.00]	8.38 [0.01]	27.64 [0.00]	6.90 [0.11]	15.29 [0.00]	6.06 [0.01]
Over-identification test	—	—	—	—	[0.438]	[0.251]
Countries	121	109	76	70	76	70

Table 5 notes

The Table reports instrumental variable estimates.
Panel *A* reports second stage estimates of two stage least squares estimates. The dependent variable is the average annual log bank inflows to county *j* (recipient country) in the 1985-2002 period. *Y* denotes real GDP per capita in 1985. *POP* denotes total population in 1985. *IQJ* is a 0-100 composite index of institutional quality in 1985.
Panel B reports estimates of the corresponding first stage models. *LEGOR_FR* is an indicator variable that takes on the value one if a country's legal system was influenced by the French tradition - French civil law legal origin *PDENS* denotes population density in 1500.
Panel *C* reports estimates of the corresponding OLS models of regressing average annual log bank flows on institutional quality in 1985 and the other controls (population and GDP per capita), shown in Panel *A* (their coefficient estimates are not reported).

Panel *D* reports the estimates of the effect of institutional quality in 1985 on average annual log bank inflows to county *j* (recipient country) in the 1985-2002 using three limited information maximum likelihood (LIML) methods. The LIML specifications also include the controls shown in Panel *A* (their coefficient estimates are not reported). The first row reports LIML estimates. The second row reports Fuller's LIML estimates using a constant of 1. The third row reports Fuller's LIML estimates using a constant of 4. For more details on these models, see Section 4.3.
Panel *E* reports regression diagnostics. The first row reports the partial R-squared of the excluded variables (the instruments) in the first-stage. The second row reports the F-score that the instruments can be excluded from the first-stage. The third row reports the p-value for the Sargan-Hansen test of over identification restrictions. The null hypothesis is that the instruments for institutional quality in 1985 (legal origin and log population density in 1500) are valid. The fourth row gives the number of observations.

Absolute values of heteroskedasticity adjusted standard errors are given in parenthesis below the coefficients. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 6: Unbundling Institutional Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$IQL_{j,85}$	0.2473**						
Institutional Quality	(0.1016)						
$CORRUPT_{j,85}$		0.1112					
Corruption		(0.0759)					
$BQL_{j,85}$			0.0901				
Bureaucratic Quality			(0.0955)				
$ETHTENS_{j,85}$				0.0717			
Ethnic Tensions				(0.0641)			
$RLAW_{j,85}$					0.1592**		
Rule of Law					(0.0781)		
$CREPUD_{j,85}$						0.2578***	
Risk of Contract Repudiati						(0.0932)	
$EXPRISK_{j,85}$							0.1680*
Expropriation Risk							(0.0955)
ln $POP_{j,85}$	0.9425	1.1944	1.2475	1.3875	1.2355	0.9977	0.9882
Log Population	(0.9462)	(0.9536)	(0.9904)	(0.9699)	(0.9270)	(0.9097)	(0.9505)
ln $Y_{j,85}$	2.9128**	4.0930***	4.1783***	4.7022***	3.4800***	3.2429***	3.9661***
Log Income	(1.4020)	(1.2058)	(1.5195)	(0.9538)	(1.3176)	(1.2317)	(1.2030)
R-squared	0.23	0.21	0.20	0.20	0.22	0.25	0.21
Countries	109	109	109	109	109	109	109

The table reports cross-country regression estimates using initial values (in 1985) of all the explanatory variables. The dependent variable is the average annual log bank inflows to county *j* (recipient country) in the 1985-2002 period. *Y* denotes real GDP per capita. *POP* denotes total population. *IQJ* is a 0-100 composite index of institutional quality. *IQL* is an average of six sub-indicators used in models (2)-(7).

(1) Corruption in Government *[CORRUPT]* is a recalled 0-100 index where lower scores indicate higher levels of corruption.
(2) Quality of the Bureaucracy *[BQL]* is a rescaled 0-100 index where high scores indicate a more autonomous from political pressure and better trained bureaucracy.
(3) Ethnic Tensions [*ETHTENS*] is rescaled 0-100 index where lower ratings are given to countries where racial and nationality tensions are high.
(4) Rule of Law [*RLAW*] is a rescaled 0-100 index where higher scores indicate better political and legal institutions.
(5) The Risk of Repudiation of Contracts by Government [*CREPUD*] index ranges from 0-100 where lower values indicate a higher likelihood of investor contract repudiation.
(6) Risk of Expropriation of Private Investment [*EXPRISK*] is a rescaled 0-100 index where lower scores suggest a higher risk of property confiscation and forced nationalization.

Absolute values of heteroskedasticity adjusted standard errors are given in parenthesis below the coefficients. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.