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Migration and Cross-Border Financial Flows

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ABSTRACT

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The gravity model has provided a tractable empirical framework to account for bilateral flows not only of manufactured goods, as in the case of merchandise trade, but also of financial flows. In particular, recent literature has emphasized the role of information costs in preventing larger diversification of financial investments. This paper investigates the role of migration in alleviating information imperfections between home and host countries. We show that the impact of migration on financial flows is strongest where information problems are more acute (that is, for more informational sensitive investments and between more culturally distant countries) and for the type of migrants that are most able to enhance the flow of information, namely, skilled migrants. We interpret these differential effects as additional evidence pointing to the role of information in generating home-bias and as new evidence of the role of migration in reducing information frictions between countries.

JEL Classification: F21, F22, O1

Keywords: migration, international financial flows, international loans, gravity models, information asymmetries

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1 Introduction

Previous literature has emphasized the role of gravity forces in determining the pattern of international financial flows. A key role in this literature is assigned to informational frictions. Gravity variables that affect the extent of such frictions (e.g., lower distance, common language, common legal origin, etc.) have consistently been shown to increase bilateral financial flows and mitigate home bias (Coeurdacier and Rey, 2013). Portes and Rey (2005) and Lane and Milesi-Ferretti (2008) show this for cross-border equity flows. Aviat and Coeurdacier (2007) extend the analysis to bank loans, equity flows and bond holdings.[1] In a recent theoretical contribution, Okawa and van Wincoop (2012) derive conditions under which the gravity model is well suited to analyze financial flows. In particular, information frictions should affect asset return volatility (and not the mean); global shocks cannot be hedged; and there are no borrowing constraints.

This paper posits that the cross-border movement of people reduces informational frictions across countries and stimulates bilateral financial flows. This is due to the fact that migration from country j to country i has the potential to reveal information on country j which is valuable for investors in country i (e.g., information on the characteristics of the home country's financial and political institutions). In addition, migrants may create or integrate into international business and financial networks, thereby enhancing financial transactions between their home and host countries. Our paper follows a growing literature demonstrating the role of migration in facilitating

[1] Historical perspectives are provided by Chitu, Eichengreen and Mehl (2013) and Flandreau (2006).

trade (Gould, 1994, Head and Ries, 1998, Rauch and Trindade, 2002, Rauch and Casella 2003, Combes et al., 2005, Iranzo and Peri, 2009), FDI (Kugler and Rapoport, 2007, 2011, Javorcik et al., 2011), and the diffusion of knowledge (Kerr 2008, Agrawal et al., 2011)[2].

We test the hypothesis that migration affects international financial flows. Therefore we introduce migration into an otherwise standard gravity model of financial flows, following Martin and Rey (2004) and Aviat and Coeurdacier (2007). As a general proposition, we expect the effect of migration on financial flows to be larger where informational imperfections are more pervasive. This is supposedly the case for long term versus short term investments, or for country pairs that differ in terms of cultural proximity. The effect of migration should also depend on migrants' skills. In particular, highly educated migrants are likely more able to transfer information and reduce bilateral transaction costs. Hence, we expect their impact on financial flows to be larger.

Our identification strategy relies on the estimation of differential effects along a number of dimensions: a skill dimension, a cultural dimension, and an asset-type dimension. We start by showing that migration has a significant positive impact on international bank loans. When we distinguish between skilled and unskilled migrants, we find a significantly stronger impact for skilled immigration. For example, when we introduce skilled and unskilled migrants jointly to a gravity model of international bank loans, we find a significant positive elasticity of skilled migrants of about 0.2 while no significant effect is found for unskilled migrants. We take this

[2]See Docquier and Rapoport (2012) for a recent survey of this literature.

result as initial supportive evidence of our conjectures.

Next, we allow for the effect of migration to vary with the degree of cultural proximity. We find that the effect of migration is nearly zero for country pairs that share common language, colonial history or legal origin, and positive otherwise. These results are consistent with the view that the potential for migration to alleviate informational frictions is higher for culturally distant countries.

Most importantly in our view, we are able to distinguish between foreign investments in long v. short term bonds. Arguably, the longer term to maturity of the former makes them riskier and more information sensitive. We find that the effect of migration on investment in long term bonds is indeed significantly stronger compared to short term bonds. Actually, for short term bonds we do not find a significant effect of migration, whereas the elasticity of investment in long term bonds with respect to migration is positive, significant and economically meaningful at 0.12-0.16, depending on specification.

Taken together, these differential effects are fully in line with the theoretical arguments outlined above and provide supportive evidence that migration contributes to lower informational frictions across countries. The main concern in this analysis is the possibility of omitted variables governing the joint pattern of migration and financial flows. However, to be able to explain the entire set of results, a possible confounder should explain not just the main effect but also the differential effects for skilled v. unskilled migrants, culturally close v. distant country-pairs, and long v. short-term bonds, as well as the time structure of our results. We find the existence of such a variable unlikely.

2 Methodology

We build on the gravity model developed by Okawa and van Wincoop (2012). In particular, we assume that investors in foreign markets perceive higher volatility of asset returns compared to domestic markets. This assumption gives rise to a gravity equation where the log of bilateral financial flows depends on the log of information frictions.[3] Information frictions depend on a set of bilateral variables such as distance, common language etc. We test the hypothesis that the information frictions between country i and country j are alleviated by migration from country j to i. In particular, we posit that migrants from country j that live in country i convey important information about country j to investors in country i. This information enables to reduce the risk and enhance financial investments from country i to country j. Hence, our gravity model takes the following form:

$$\log\left(\text{Loans}_{ij}\right) = \alpha_1 \log\left(\text{Migration}_{ij}\right) + \alpha_2 \log\left(\text{Distance}_{ij}\right) + \alpha_3 X_{ij} + c_i + c_j + \epsilon_{ij} \qquad (1)$$

Loans_{ij} denotes the stock of international bank loans from country i to country j as of 2000. We also use bonds and equity as alternative dependent variables. Migration_{ij} is the immigration stock from origin country j living in destination country i. Hence, our benchmark regression studies how migration from country j to country i affects

[3] Okawa and van Wincoop (2012) show that this specification also depends on the assumptions that investors can fully hedge against global or regional shocks and that there are no borrowing constraints. To the extent that these assumptions do not fully hold in our context, we view the gravity model as an approximation of the true model. In this case, our identification depends on the accuracy of the gravity model as an approximation of the true model.

financial flows in the reverse direction, namely, from country i to country j. The regression controls for the distance between the two countries as well as for other variables that are associated with cultural and economic proximity, denoted collectively by X_{ij}, as well as for origin and destination-country fixed effects, which are denoted by c_i and c_j.

Our main assumption is that financial investments are informational sensitive. In other words, investors tend to invest more in places they know better. The well known implication of this assumption is the home bias in financial flows, which has been found repeatedly in the literature (Coeurdacier and Rey, 2013). Given these information frictions, the presence of migrants is expected to stimulate bilateral financial flows. Specifically, migrants facilitate the flow of information from their home countries to their host countries. Hence, financial flows from country i to country j should be positively affected by the presence of migrants that were born in country j and reside in country i. This hypothesis is modelled in equation (1).

However, equation (1) may suffer from omitted variable bias. To address this issue, we rely for identification on differential effects across a number of dimensions. The first dimension is the general level of education of the migrants. To get involved in the financial sector, migrants need to have high cognitive skills. First, they are expected to have deep knowledge about their home country economy and be able to gain new knowledge constantly. Second, they need to be able to exchange this knowledge with the financial sector of their host country in a credible way. This task requires high communication skills. Hence, the migration effect is likely to be stronger when migrants are more skilled. This differential effect is tested in section

4.1 where we compare the effect of migration on international bank loans for skilled (i.e., with college education) versus unskilled (i.e., with below-college education) migrants.

Another dimension which we exploit is the cultural proximity between the two countries. Since migrants alleviate informational frictions, their impact on financial flows should be strongest for country pairs that exhibit high informational frictions. For instance, migrants are likely to have a stronger impact on financial flows between the US and Egypt than between the US and Canada, simply because informational frictions in the latter case are very weak. We test this dimension in section 4.2.

Finally, we also look at differences between different securities. Specifically, we test the migration impact on investment in long term versus short term bonds. Our hypothesis, which is supported by external data, is that apart from term to maturity, long term bonds and short term bonds are relatively similar along other dimensions (see Table 7). The difference in the term to maturity imposes a difference in informational sensitivity. In particular, long term bonds are likely to be more informational sensitive than short term bonds, because they require to forecast economic conditions on a longer horizon, meaning that uncertainty is increased. This excess informational friction of long term bonds relative to short term bonds can be alleviated by migrants. Hence, the migration effect should be stronger for long term bonds relative to short term bonds. We test this hypothesis in section 5.

For robustness, we also apply our benchmark model to estimate the migration impact on equity flows, and compare the results to similar regressions on loans and bonds. In addition, we also test the robustness of our findings by using different time

periods (1990-2000, and 2000-2010).

To summarize, we estimate differential effects along three dimensions - skilled versus unskilled migrants, cultural proximity, and long versus short term bonds. These dimensions form the basis of our identification strategy.

3 Data

The migration data come from Artuc, Docquier, Ozden and Parsons (2013) data set, the last extension of the Docquier and Marfouk (2006) dataset which includes bilateral data on migration by country of birth, skill category (skilled v. unskilled, the former having college education) and gender for 195 sending/receiving countries in 1990 and 2000. The main additional novelty is that the dataset now captures South-South migration based mainly on observations and occasionally on estimated data points (for the skill structure).[4]

Our financial data come from two commonly used sources. Data on international bank loans are from the Consolidated Banking Statistics published by the Bank of International Settlements (BIS). Our main specification refers to the year 2000, for which we have 17 lending countries, 175 borrowing countries and a total of 1,628 country pairs (observations) with positive loan values, given missing data.

We also use cross border investments in tradable securities, provided by the International Monetary Fund (IMF) in its Coordinated Portfolio Investment Survey (CPIS). This survey was first conducted in 1997, and then from 2001 on a yearly basis. This dataset provides data on cross border investments in equity, long term

[4]See http://perso.uclouvain.be/frederic.docquier/filePDF/DMOP-ERF.pdf for further details.

bonds and short term bonds. We use data for the year 2001. Overall, the CPIS data provides a more balanced dataset. For example, when we use investment in bonds as a dependent variable, our sample consists of 32 investing (lending) countries in 91 destinations, a total of 1,463 observations (country pairs).[5] By contrast, a similar regression on bank loans consists of 17 lending countries in 178 destinations, a total of 1,827 observations.

Given that our migration data includes two years, 1990 and 2000, we are able to estimate the migration effect in several ways. We choose an estimation strategy that minimizes as much as possible endogeneity concerns. First, we take a lag of 10 years between the migration data and the financial data. Hence, we regress financial flows in 2000 on migration data in 1990. This way we reduce short term endogeneity, such as new countries that were established in the 1990s and experienced and outflow of migrants and an inflow of foreign investments.

Second, we choose as our benchmark results the regression of financial investments in 2000 on migration in 1990, though we also run similar regressions for 2010 financial data on 2000 migration data. The reason we focus on the earlier period is that our dataset indicates that many country pairs had no financial investments in the 1980s, and started their investment connections only in the 1990s. For instance, if we restrict our sample to 16 countries that were active in foreign lending in 1985, we obtain around 1,400 lending-borrowing country pairs between 1985 and 1992. The number of country pairs increased significantly during the 1990s and reached 1,877 by the end of the decade. By contrast, in the following decade there was no significant

[5]This sample includes zero and positive values of investments in bonds, used as a dependent variable in Poisson regression

change in the number of country pairs.[6] Part of the increase in lending-borrowing country pairs in the 1990s is due to new countries that were formed in the 1990s and part is due to a rise in the volume of international loans. In this respect, the migration stock in 1990 can be regarded as a predetermined variable for country pairs that had no lending activity in the 1980s and started to lend in the 1990s.[7]

We complete our dataset with gravity variables taken from Aviat and Coeurdacier (2007) and CEPII (CHELEM dataset). Trade data are taken from Feenstra et al. (2005).

4 Results

To relate our results to previous literature, we start with the specification of Aviat and Coeurdacier (2007) who studied a similar regression without the migration variable. After replicating their results, we proceed with a specification that is in line with Okawa and van Wincoop (2012). This specification includes country fixed effects of source and destination countries and excludes asset return variables. We estimate this specification with OLS and Poisson estimator, where the latter enables to include zero flows.

Table 1 presents the main findings. Columns (1) reports a gravity specification without country fixed effects, which replicates the first specification studied by Aviat and Coeurdacier (2007).[8] To save space, the table reports only variables that are ij

[6] In 2010 the number of country pairs reached 1,908.

[7] However, our results are fully robust to the use of data for the 2000-2010 period.

[8] The only difference is that Aviat and Coeurdacier (2007) imposed a coefficient of one on the log of GDP while we do not. However, since we concentrate in the main text on the specification

specific. The results suggest that cross-border international loans tend to increase with physical and cultural proximity, as found previously by Aviat and Coeurdacier (2007) and Portes and Rey (2005). Overall, our estimated coefficients are consistent with Aviat and Coeurdacier (2007). For instance, the distance coefficient in Aviat and Coeurdacier (2007) is estimated at -0.44 (table 4 column 3 in their paper), which is statistically not different from our estimate.

We introduce migration in column (2) and find a strong positive effect of migration on international loans, with an elasticity of .18. Interestingly, the inclusion of migration reduces the coefficients of the traditional gravity variables (e.g., distance, colonial links, common language and common legal origin). This result suggests that the presence of foreign migrants helps alleviating information frictions that impede foreign lending. We explore this hypothesis further below.

The flow of migration between countries is not random. Some countries tend to attract more migrants than others (e.g., the US), or send more migrants to other countries (e.g., African countries). Hence, the main concern with the specification in column (2) is that the migration variable captures unobservable characteristics of the sending or receiving countries which are also correlated with financial flows. A first step to address this issue is to include country fixed effects. Columns (3) and (4), therefore, report the results with country fixed effects. The coefficient on migration is still highly significant; the other coefficients are generally robust to the inclusion of fixed effects, though some of them exhibit large changes in magnitude, in particular the distance variable.

with country fixed effects, this difference will be immaterial.

Our preferred model follows the gravity specification of Okawa and van Wincoop (2012), which is consistent with information frictions that affect the perceived volatility of asset returns. Hence, we drop the fiscal variables, which represent transaction costs that do not affect the perceived volatility. We also drop stock market correlation, as suggested by Okawa and van Wincoop (2012). This does not affect much the explanatory power of the regression, as evident from the R^2 statistic. On the other hand, we gain a much larger sample with 17 lending countries, 175 borrowing countries and a total of 1,628 observations (country pairs), given missing data and zeros, which is twice the original sample size. For a list of countries included in this sample see Table 10. Moreover, by employing the Poisson estimator suggested by Santos Silva and Tenreyro (2006) we are able to include observations with zero loans, which raises the sample size to 1,827 observations. Note that we add only country pairs for which we positively know that the amount of loans is zero or close to zero.[9] The Poisson estimator produces a smaller distance coefficient, as already emphasized by Santos Silva and Tenreyro (2006) in a trade regression. By contrast, the migration coefficient slightly increases (see Column 6) compared to the OLS estimator (see Column 5) and remains highly significant. However, the other covariates seem less robust to the estimation method, as their coefficients change significantly across the two estimators.

[9]The rise in the sample size is moderate for two reasons, First, we include only country pairs that have positive migration flows. Second, countries that do not borrow from at least two lending countries are dropped due to the fixed effects. Hence, conditional on having positive migration and at least two lending countries per each borrowing country, the share of country pairs with zero loans is around 11 percent of the sample.

4.1 Skilled versus unskilled migration

As explained in section 2, our identification strategy relies on differential effects along three dimensions: skilled versus unskilled, cultural proximity, information sensitivity. The significance of migration in the gravity regressions of foreign loans suggests that migrants indeed alleviate informational frictions between their host and home countries. Arguably, to be able to perform such a role, migrants should have the required skills and connections that allow them to communicate efficiently with the financial markets in their host country and connect them with their home countries. Hence, one would expect the migration effect to work mainly through skilled migrants. We test this hypothesis by comparing the coefficient of skilled migrants versus unskilled migrants in the gravity model.

Table 2 re-estimates the gravity model by distinguishing between skilled and unskilled migrants. Skilled migrants are defined as migrants with at least college education. The samples correspond to columns (5) and (6) of Table 1, subject to data availability. The results strongly indicate that the migration effect is driven primarily by skilled migrants. When skilled and unskilled migrants are included separately in the regression (columns 1 and 2) the coefficient on skilled migration is substantially higher and more significant than for unskilled migration. When they are jointly included, only skilled migration is significant, be it in the OLS or the Poisson regressions in columns (3) and (5), respectively. Columns (4) and (6) perform the same test on bilateral export, as a placebo test. As can be seen, in the export regressions there is no differential effect for skilled migration. This replicates Kugler and Rapoport (2011b) that found a similar result on a much larger sample. This

result implies that foreign loans are much more information sensitive than foreign trade.

4.2 Cultural Proximity

We next examine the migration effect on countries that are culturally close to each other compared to countries that are culturally distant. We therefore add interaction terms between migration and cultural proximity variables, such as common language, common colonizer and common legal origin. We expect the migration effect to be stronger for country pairs that are culturally distant, that is, we expect a negative coefficient on the interaction terms. In these cases indeed, information frictions are likely to be more severe.

The OLS and Poisson estimators are presented in Tables 3 and 4. We focus on skilled migration because our previous findings indicate that the migration effect works mainly through skilled migration. The results show that the migration effect is smaller for countries that are culturally closer one to the other. In fact, the Poisson estimates suggest that the migration effect is practically zero for countries that are culturally close. Hence, the presence of migrants is mostly critical to financial flows between countries that are culturally more distant. A similar picture arises from the OLS estimator (Table 3), however, the results are somewhat weaker.

5 Other Types of Financial Flows

Thus far we examined the impact of migration on international bank lending. To test the robustness of our previous results, we extend the analysis to tradable securities. Tables 5 and 6 estimate gravity regressions of loans, equity and debt securities. Skilled and unskilled migration are used as explanatory variables. Table 5 reports the OLS estimator and Table 6 reports the Poisson estimator. Since the availability of securities data is more limited than for international loans, we focus on the Poisson results (Table 6). These results include observations with zero values, which raises the sample size from 748 to 1069 observations. The sample is fixed across all regressions, covering 17 lending countries and 109 borrowing countries.

The results in Table 6 confirm our previous findings. Migration has a significant impact on all three types of financial assets: bank loans, equity shares, and bonds. Moreover, the coefficients for skilled migrants are consistently higher than for unskilled migrants, which is in accordance with our previous results. This result suggests that the presence of migrants alleviates information frictions that impede investment in foreign assets. Hence, our results seem to be robust to different types of financial assets.

The extension of the empirical analysis to heterogeneous financial assets enables to identify the migration effect in yet another way. We can test whether the impact of migration differs across financial assets that vary in their information sensitivity. Namely, investment in financial assets that are riskier and requires deeper knowledge about the destination country should be affected more strongly by the presence of migrants from the destination country. For instance, bank loans are usually regarded

as more information sensitive and require careful monitoring. On the other hand, securities are traded openly and information on these assets flows publicly.

Indeed, Tables 5 and 6 indicate that the migration effect is somewhat stronger for loans, compared to shares and bonds. However, the difference is generally not significant. The reason might be related to the fact that loans, equity and bonds differ on many dimensions, not just information frictions. First, the agencies that collect the data are different. Data on loans are collected by the BIS and securities data are collected by the IMF. The two institutions use different definitions of cross-border financial flows. Second, these broad aggregates comprise heterogeneous portfolios, on which we have no information. For instance, bank loans may represent claims on safe financial institutions, which are less informational sensitive, or direct loans to private corporations, which bear higher information cost. In this regard, Tables 5 and 6 are not very useful in identifying differential effects across different asset classes.

To explore this point more neatly, we exploit data on international investment in long term and short term bonds. These two types of securities differ mainly in their term to maturity. To support this argument, we provide data on European bonds published by the ECB, which is summarized in Table 7. These data show that 95 percent of short term bonds and long term bonds are issued by financial institutions and governments. Only 5 percent are issued by non-financial corporations. The table shows that long term bonds and short term bonds are fairly similar in terms of issuer's type. Moreover, almost all bonds are issued by borrowers that are relatively

safe, namely, governments and financial institutions.[10] This indicates that the heterogeneity in credit risk across long term and short term bonds is relatively narrow. While this data represent European Bonds, we do not have any reason to believe that it is dramatically different in other countries. Hence, we conclude that long term bonds and short term bonds reflect assets that are relatively homogeneous in terms of credit risk. Thus, the principal difference between long term and short term bonds is the term to maturity.[11] We use this difference as a proxy for information sensitivity.

Investment in long term bonds requires deeper understanding of the destination country. The investor needs to forecast credit risks on a longer horizon. Furthermore, if the bonds are not held to maturity, then interest rate risk is also involved. In most cases, exchange rate risk would also be an issue in international bond markets. Hence, investors in long term bonds need to have better knowledge not only on the credit risk of the particular issuer, but also on the macroeconomic environment of the destination country. This implies that investment in long term bonds is more informational sensitive than short term bonds. Hence, we can identify the migration effect by testing whether the migration coefficient is larger for long term bonds compared to short term bonds.

The results are presented in Tables 8 and 9. Since the sample size is small, we again focus here on the Poisson estimator, presented in Table 9, which includes zero values (but not missing data). The list of countries included in this sample is

[10] It should be noted that our regressions refer to 2001, hence the rise in default risk of banks and governments during the crisis of 2008 is not included in our sample period.

[11] Short term bonds are defined as bonds with maturity of up to one year.

given in Table 11. The main result that appears from the table is that migration is still highly significant for long term bonds, but not significant for short term bonds. Moreover, the differential effect of skilled versus unskilled migration holds in the regression on long term bonds, but not on short term bonds. These results indicate that the migration effect works through the information channel, because informationally sensitive investments are more affected by the presence of migrants.

6 Conclusion

This paper investigates the role of migration as a determinant of international financial flows. We introduce migration into a standard gravity model and find a positive impact on three different types of financial investments (bank loans, equity shares and bonds). The results strongly suggest that the channel through which migration affects bilateral financial flows is the information channel. Indeed, we find that the effect of migration on financial flows is strongest where informational problems are more acute. This is the case when we compare asset types that differ in terms of informational sensitivity (e.g., short versus long term bonds), country pairs characterized by different levels of cultural proximity (e.g., countries sharing versus not sharing a common language), and types of migrants that differ in their ability to disseminate information across borders (e.g., high-skill versus low-skill migrants).

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Table 1: International bank lending and migration

Dependent Variable:	$\log(\text{Loans}_{ij})$					Loans_{ij}
	(1)	(2)	(3)	(4)	(5)	(6)
$\log \text{Migration}_{ij}$		0.184^{***}		0.125^{**}	0.150^{***}	0.179^{***}
		(0.038)		(0.050)	(0.037)	(0.028)
$\log \text{Distance}_{ij}$	-0.368^{***}	-0.247^{***}	-0.710^{***}	-0.595^{***}	-0.701^{***}	-0.253^{***}
	(0.078)	(0.080)	(0.121)	(0.123)	(0.107)	(0.050)
$(\text{Colonial Link})_{ij}$	0.897^{***}	0.777^{***}	1.337^{***}	1.169^{***}	1.328^{***}	0.176
	(0.239)	(0.239)	(0.266)	(0.267)	(0.204)	(0.170)
$(\text{Language})_{ij}$	0.320	0.075	0.127	0.048	0.260	-0.197
	(0.202)	(0.216)	(0.187)	(0.190)	(0.160)	(0.236)
$(\text{Legal origin})_{ij}$	0.694^{***}	0.579^{***}	0.485^{***}	0.410^{***}	0.144	0.450^{***}
	(0.109)	(0.117)	(0.124)	(0.117)	(0.111)	(0.121)
$(\text{Fiscal Treaty})_{ij}$	0.009^{*}	0.007	0.001	-0.001		
	(0.005)	(0.005)	(0.004)	(0.004)		
$(\text{Dividend Tax})_{ij}$	-0.012	-0.015	-0.022^{*}	-0.024^{**}		
	(0.011)	(0.011)	(0.011)	(0.011)		
$(\text{Interest Tax})_{ij}$	-0.014	-0.014	0.013	0.013		
	(0.012)	(0.012)	(0.011)	(0.011)		
$(\text{Correlation})_{ij}$	2.247^{***}	1.946^{***}	0.285	0.338		
	(0.470)	(0.510)	(0.538)	(0.550)		
Country fixed effects	No	No	Yes	Yes	Yes	Yes
N	824	824	824	824	1,628	1,827
L	16	16	16	16	17	17
B	62	62	62	62	175	178
R^2	0.69	0.70	0.86	0.86	0.85	0.94
Estimator	OLS	OLS	OLS	OLS	OLS	Poisson

Columns (1)-(5) are estimated by OLS. Column (6) is estimated by the Poisson estimator. Standard errors are clustered at the borrowing country level. N, L and B denote number of observations, number of lending countries and number of borrowing countries. Columns (1) and (2) include in addition the following country specific variables that are not reported: the log of GDP of countries i and j, the average stock return of country j, a dummy if country j is a tax haven and corruption dummies for countries i and j. These variables are dropped out in columns (3)-(6) which include country fixed effects for countries i and j.

Table 2: Skilled versus unskilled migration

Dependent Variable:	log(Loans)			log(Export)	Loans	Export
	(1)	(2)	(3)	(4)	(5)	(6)
log(Skilled)	0.185***		0.217***	0.072**	0.232***	0.087
	(0.041)		(0.066)	(0.035)	(0.090)	(0.058)
log(Unskilled)		0.120***	−0.033	0.084**	0.001	0.119**
		(0.034)	(0.054)	(0.033)	(0.069)	(0.056)
log(Distance)	−0.726***	−0.742***	−0.736***	−0.815***	−0.258***	−0.633***
	(0.108)	(0.116)	(0.112)	(0.063)	(0.051)	(0.051)
N	1,427	1,427	1,427	1,427	1,546	1,546
L	17	17	17	17	17	17
B	158	158	158	158	157	157
R^2	0.86	0.86	0.86	0.93	0.94	0.97
Estimator	OLS	OLS	OLS	OLS	Poisson	Poisson

Columns (1), (2), (3) and (5) estimate the impact of migration on loans, whereas columns (4) and (6) estimate the impact on trade. All columns are estimated by OLS except for columns (5) and (6) that are estimated by Poisson. Standard errors are clustered at the borrowing country level. N, L and B denote number of observations, number of lending countries and number of borrowing countries, respectively. All columns include country fixed effects, colonial link, language and legal origin as additional controls.

Table 3: Comparison between culturally closer/more distant countries (OLS results)

Dependent Variable:	log(Loans)			
	(1)	(2)	(3)	(4)
$\log \text{Skilled}_{ij}$	0.200^{***}	0.207^{***}	0.193^{***}	0.191^{***}
	(0.041)	(0.040)	(0.044)	(0.044)
$\log \text{Skilled}_{ij} * \text{Language}_{ij}$	-0.101^{**}			-0.099^{*}
	(0.049)			(0.052)
$\log \text{Skilled}_{ij} * \text{Colonizer}_{ij}$		-0.135^{*}		-0.104
		(0.074)		(0.076)
$\log \text{Skilled}_{ij} * \text{Legal}_{ij}$			0.011	0.061
			(0.037)	(0.041)
$\log \text{Distance}_{ij}$	-0.715^{***}	-0.676^{***}	-0.695^{***}	-0.695^{***}
	(0.102)	(0.103)	(0.102)	(0.104)
Obs.	1,601	1,601	1,601	1,601
No. of Lending Countries	17	17	17	17
No. of Borrowing Countries	177	177	177	177
R^2	0.85	0.85	0.85	0.85
Estimator	OLS	OLS	OLS	OLS

This table reports the OLS estimates of the differential effect of migration on loans across country pairs with different cultural proximity, measured by: (1) common language, (2) common colonizer (3) common legal origin. Standard errors are clustered at the borrowing country level. N, L and B denote number of observations, number of lending countries and number of borrowing countries, respectively. All columns include country fixed effects, colonial link, language and legal origin as additional controls.

Table 4: Comparison between culturally closer/more distant countries (Poisson results)

Dependent Variable:	Loans			
	(1)	(2)	(3)	(4)
log(Skilled)	0.204***	0.230***	0.244***	0.211***
	(0.033)	(0.035)	(0.032)	(0.032)
log(Skilled)*Language	−0.273***			−0.224***
	(0.068)			(0.076)
log(Skilled)*Colonizer		−0.194**		−0.099
		(0.082)		(0.076)
log(Skilled)*Legal			−0.144**	−0.018
			(0.056)	(0.067)
log(Distance)	−0.297***	−0.217***	−0.273***	−0.274***
	(0.048)	(0.042)	(0.039)	(0.054)
N	1,776	1,776	1,776	1,776
L	17	17	17	17
B	177	177	177	177
R^2	0.94	0.94	0.94	0.94
Estimator	Poisson	Poisson	Poisson	Poisson

This table reports the Poisson estimates of the differential effect of migration on loans across across country pairs with different cultural proximity, measured by: (1) common language, (2) common colonizer (3) common legal origin. Standard errors are clustered at the borrowing country level. N, L and B denote number of observations, number of lending countries and number of borrowing countries, respectively. All columns include country fixed effects, colonial link, language and legal origin as additional controls.

Table 5: Loans, Equity Shares and Bonds - OLS

Dependent variables:	log(Loans)		log(Equity)		log(Bonds)	
	(1)	(2)	(3)	(4)	(5)	(6)
log(Skilled)	0.202***		0.197***		0.133**	
	(0.069)		(0.069)		(0.059)	
log(Unskilled)		0.120**		0.117**		0.072
		(0.046)		(0.056)		(0.048)
log(Distance)	−0.588***	−0.613***	−0.497***	−0.522***	−0.655***	−0.678***
	(0.092)	(0.093)	(0.112)	(0.113)	(0.106)	(0.106)
N	748	748	748	748	748	748
L	17	17	17	17	17	17
B	101	101	101	101	101	101
R^2	0.85	0.85	0.91	0.91	0.86	0.86
Estimator	OLS	OLS	OLS	OLS	OLS	OLS

This table estimates the effect of migrants on several types of foreign assets: (1) bank loans, (2) equity shares (3) bonds. N, L and B denote number of observations, number of lending (investing) countries and number of borrowing (issuing) countries, respectively. Models are estimated by OLS with standard errors clustered at the destination country (borrowing country). All columns include country fixed effects, colonial link, language and legal origin as additional controls.

Table 6: Loans, Equity Shares and Bonds - Poisson

Dependent variables:	Loans		Equity shares		Bonds	
	(1)	(2)	(3)	(4)	(5)	(6)
log(Skilled)	0.247***		0.170***		0.235***	
	(0.043)		(0.063)		(0.041)	
log(Unskilled)		0.156***		0.152***		0.187***
		(0.030)		(0.051)		(0.032)
log(Distance)	−0.271***	−0.278***	−0.287***	−0.272***	−0.274***	−0.259***
	(0.046)	(0.051)	(0.058)	(0.065)	(0.070)	(0.072)
N	1,069	1,069	1,069	1,069	1,069	1,069
L	17	17	17	17	17	17
B	109	109	109	109	109	109
R^2	0.92	0.92	0.95	0.95	0.95	0.95
Estimator	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson

This table re-estimates the models in table 5 with the Poisson estimator. Standard errors are clustered at the borrowing country level. N, L and B denote number of observations, number of lending (investing) countries and number of borrowing (issuing) countries, respectively. All columns include country fixed effects, colonial link, language and legal origin as additional controls.

Table 7: Summary statistics of long term and short term bonds by issuer type - ECB data

	Total	Financials	Non-Financials	Government
	EUR bn		*ratios of total*	
Short term	1,599	.505	.049	.445
Long term	14,924	.536	.053	.411

Data refers to outstanding bonds issued by residents in the Euro area, as of 2011. Source: ECB, Monthly Bulletin, April 2013.

Table 8: Long term versus short term bonds - OLS

Dependent variables:	Long term bonds		Short term bonds	
	(1)	(2)	(3)	(4)
log(Skilled)	0.166**		0.135	
	(0.081)		(0.118)	
log(Unskilled)		0.147**		0.044
		(0.062)		(0.088)
log(Distance)	−0.467***	−0.445***	−0.797***	−0.840***
	(0.108)	(0.104)	(0.133)	(0.131)
N	533	533	533	533
L	31	31	31	31
B	84	84	84	84
R^2	0.89	0.90	0.74	0.74
Estimator	OLS	OLS	OLS	OLS

This table estimates the effect of migration on investment in long term bonds and short term bonds. N, L and B denote number of observations, number of lending (investing) countries and number of borrowing (issuing) countries, respectively. Regressions are estimated by OLS. Standard errors are clustered at the borrowing country level. All columns include country fixed effects, colonial link, language and legal origin as additional controls.

Table 9: Long term versus short term bonds - Poisson

Dependent variables:	Long term bonds		Short term bonds	
	(1)	(2)	(3)	(4)
log(Skilled)	0.160^{***}		0.089	
	(0.038)		(0.071)	
log(Unskilled)		0.126^{***}		0.081
		(0.028)		(0.060)
log(Distance)	-0.323^{***}	-0.311^{***}	-0.146^{**}	-0.129
	(0.071)	(0.071)	(0.061)	(0.080)
N	1,463	1,463	1,463	1,463
L	32	32	32	32
B	91	91	91	91
R^2	0.95	0.95	0.94	0.94
Estimator	Poisson	Poisson	Poisson	Poisson

This table estimates the effect of migration on investment in long term bonds and short term bonds. N, L and B denote number of observations, number of lending (investing) countries and number of borrowing (issuing) countries, respectively. Regressions are estimated by Poisson. Standard errors are clustered at the borrowing country level. All columns include country fixed effects, colonial link, language and legal origin as additional controls.

Table 10: Country Sample - General

Lending countries	Borrowing countries						
Austria (73)	Afghanistan (3)	Cambodia (5)	Eq. Guinea (3)	Ireland (15)	Mali (7)	Poland (13)	Switzerland (15)
Belgium (134)	Albania (6)	Cameroon (9)	Estonia (11)	Israel (12)	Malta (10)	Portugal (13)	Syria (7)
Canada (40)	Algeria (13)	Canada (15)	Ethiopia (9)	Italy (16)	Mauritania (6)	Qatar (7)	Taiwan (10)
Denmark (16)	Angola (9)	Cape Verde (3)	Fiji (4)	Jamaica (8)	Mauritius (8)	Romania (14)	Tajikistan (6)
Finland (82)	Argentina (15)	Central Africa (3)	Finland (14)	Japan (15)	Mexico (15)	Russia (15)	Tanzania (8)
France (164)	Armenia (5)	Chad (2)	France (16)	Jordan (11)	Moldova (6)	Rwanda (6)	Thailand (15)
Germany (131)	Australia (16)	Chile (14)	Gabon (7)	Kazakhstan (11)	Mongolia (2)	Samoa (4)	Togo (6)
Italy (103)	Austria (15)	China: Mainland (15)	Gambia (4)	Kenya (10)	Morocco (13)	Sao Tome (3)	Tonga (2)
Japan (33)	Azerbaijan (7)	China: Hong Kong (7)	Georgia (8)	Korea (15)	Mozambique (8)	Saudi Arabia (13)	Trinidad and Tob. (6)
Netherlands (155)	Bahamas (9)	Colombia (14)	Germany (16)	Kuwait (8)	Myanmar (7)	Senegal (9)	Tunisia (13)
Portugal (66)	Bahrain (7)	Comoros (2)	Ghana (11)	Kyrgyz Rep. (6)	Namibia (4)	Seychelles (6)	Turkey (13)
Spain (91)	Bangladesh (8)	Congo, Dem (7)	Greece (14)	Lao Dem.Rep (5)	Nepal (8)	Sierra Leone (5)	Turkmenistan (6)
Sweden (70)	Barbados (7)	Congo, Rep. (8)	Grenada (5)	Latvia (11)	Netherlands (14)	Singapore (13)	Uganda (8)
Switzerland (145)	Belarus (9)	Costa Rica (9)	Guatemala (11)	Lebanon (12)	New Zealand (15)	Slovak Rep. (12)	Ukraine (11)
Turkey (25)	Belgium (15)	Croatia (12)	Guinea (7)	Lesotho (5)	Nicaragua (8)	Slovenia (13)	U. A. Emirates (7)
UK (155)	Belize (7)	Cuba (9)	Guinea-Bissau (3)	Liberia (12)	Niger (7)	Somalia (2)	UK (16)
US (145)	Benin (7)	Cyprus (11)	Guyana (5)	Libya (6)	Nigeria (12)	South Africa (13)	US (16)
	Bolivia (10)	Czech Republic (13)	Haiti (5)	Lithuania (12)	Norway (15)	Spain (15)	Uruguay (11)
	Bosnia (12)	Cote dIvoire (9)	Honduras (9)	Luxembourg (14)	Oman (6)	Sri Lanka (11)	Uzbekistan (9)
	Botswana (4)	Denmark (14)	Hungary (13)	Macau SAR (6)	Pakistan (14)	St. Lucia (2)	Vanuatu (2)
	Brazil (15)	Dominica (3)	Iceland (13)	Macedonia, Fyr (10)	Panama (11)	St. Vincent G. (4)	Venezuela (11)
	Brunei (5)	Dominican Rep. (9)	India (15)	Madagascar (6)	Papua N. Guinea (6)	Sudan (8)	Vietnam (12)
	Bulgaria (14)	Ecuador (9)	Indonesia (14)	Malawi (5)	Paraguay (8)	Suriname (4)	Yemen (6)
	Burkina Faso (5)	Egypt (13)	Iran (13)	Malaysia (12)	Peru (14)	Swaziland (3)	Zambia (6)
	Burundi (4)	El Salvador (8)	Iraq (12)	Maldives (3)	Philippines (14)	Sweden (14)	Zimbabwe (8)

This table presents the country sample of the regression in Table 1, Column (5). The other OLS regressions use subsets of this sample, depending on missing data. Poisson regressions may include few more borrowing countries due to the inclusion of zero values. The samples of Tables 8-9 are different and presented in Table 11. The parentheses show the number of observations where the country is a lending country (the left column) or a borrowing country (the other columns). For example, the US is a lender in 145 observations and a borrower in 16 observations. Since the number of lending countries is much smaller than the number of borrowing countries, a lending country lends to many borrowers but a borrowing country borrows from few lenders in this sample.

Table 11: Country Sample for Bond Regression

Lending countries	Borrowing countries		
Australia (90)	Argentina (19)	Greece (16)	Pakistan (16)
Austria (61)	Australia (23)	Guatemala (12)	Panama (12)
Belgium (88)	Austria (20)	Honduras (11)	Peru (16)
Brazil (13)	Bahamas, The (8)	China: Hong Kong (11)	Philippines (18)
Canada (14)	Bahrain (6)	Hungary (17)	Poland (17)
Chile (34)	Bangladesh (14)	Iceland (14)	Portugal (19)
Czech Republic (69)	Belgium (22)	India (18)	Qatar (5)
Denmark (85)	Bolivia (14)	Indonesia (17)	Romania (18)
Finland (22)	Bosnia and Herzegovina (15)	Iran (15)	Russian Federation (20)
France (89)	Botswana (7)	Ireland (21)	Saudi Arabia (9)
Germany (81)	Brazil (19)	Israel (16)	Senegal (11)
Greece (5)	Bulgaria (15)	Italy (25)	Singapore (14)
Hungary (5)	Cote d'Ivoire (12)	Jamaica (12)	Slovak Republic (17)
Iceland (5)	Canada (23)	Japan (21)	Slovenia (14)
Ireland (33)	Chile (15)	Jordan (14)	South Africa (15)
Italy (76)	China (20)	Kazakhstan (14)	Spain (24)
Japan (30)	Colombia (15)	Kenya (13)	Sweden (23)
Korea, Rep. (17)	Costa Rica (13)	Korea, Rep. (17)	Switzerland (22)
Luxembourg (78)	Croatia (16)	Lebanon (16)	Taiwan (13)
Netherlands (89)	Cyprus (13)	Luxembourg (18)	Thailand (17)
New Zealand (41)	Czech Republic (16)	Malaysia (16)	Trinidad and Tobago (12)
Norway (83)	Denmark (19)	Malta (13)	Tunisia (15)
Poland (32)	Ecuador (14)	Mexico (18)	Turkey (19)
Portugal (14)	Egypt, Arab Rep. (14)	Morocco (15)	Ukraine (16)
Slovak Republic (3)	El Salvador (11)	Namibia (10)	United Arab Emirates (7)
South Africa (7)	Estonia (14)	Netherlands (23)	United Kingdom (28)
Spain (22)	Finland (20)	New Zealand (17)	United States (29)
Sweden (14)	France (27)	Nicaragua (12)	Uruguay (15)
Switzerland (89)	Georgia (12)	Nigeria (15)	Venezuela, RB (13)
Turkey (4)	Germany (27)	Norway (20)	Vietnam (16)
United Kingdom (89)			Zimbabwe (13)
United States (81)			

This table presents the country sample of Table 9, which includes zero values of the dependent variable. The sample of Table 8 does not include the zero values. The parentheses show the number of observations where the country is a lending country (the left column) or a borrowing country (the other columns).