

The Impact of Migration on Foreign Direct Investments

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Preliminary Version[‡]

Abstract

In this paper, I investigate whether the presence of migrants has an impact on foreign direct investment decisions. Using a novel data set on world bilateral FDI stocks, I show that migration is a key factor in determining bilateral direct investment allocation. I also identify other important drivers mostly overlooked in the literature, namely bilateral linguistic and genetic distance. Finally, I provide empirical evidence confirming the pre-existing hypothesis that immigrants reduce informational frictions between countries.

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1 Introduction

“The world is not borderless, flat, small or even shrinking”

Head & Mayer, Canadian Journal of Economics, 2013

For at least one hundred years, individuals have been having the perception that frontiers are gradually disappearing and that geographic distance would matter less and less (Orwell 1944). However, even after reductions in transportation costs and the abolition of many formal trade barriers, borders and distance still impede economic exchanges (Head & Mayer 2013). A plethora of factors are at the roots of international frictions: information costs, contract enforcement costs, costs associated with the usage of different currencies and languages, legal and regulatory costs have all been shown to affect bilateral economic exchanges (Anderson & van Wincoop 2004, Coeurdacier & Rey 2012, Head & Mayer 2013).

In light of these findings, the economic research has reassessed the link between migration and economic outcomes. This paper belongs to this strand of literature insofar as it investigates whether the presence of a diaspora fosters FDIs from the home to the host country of migrants, and whether the effect is due to a reduction in informational asymmetries. Indeed migrants carry with them knowledge and skills acquired in the home country, where often a different language and different cultural and social norms prevail. The social and human capital acquired before migrating and the degree of familiarity with the home country are likely to affect the host country as well as the bilateral relationships between the two. The networking effect of migrants has been recently recognised and investigated by economists in the field of international trade. In fact, recent work has uncovered a complementarity between trade and migration, which seems to arise because migrants derive higher utility for goods produced in their home country (Atkin 2016), or foster economic interactions by helping to reduce informal barriers to

trade such as language, culture and institutions (Felbermayr & Jung 2009) or creating business relationships (Gould 1994, Felbermayr & Toubal 2012, Rauch & Casella 2003). More specifically, migrant networks improve bilateral trade at both the extensive and intensive margin (Bastos & Silva 2012) by providing an implicit contract guarantee and deterring opportunistic behavior Rauch & Trindade (2002).¹

Although the effect of migration on international trade and international portfolio investments is well documented (Kugler et al. 2013), the possible link with foreign direct investments (FDIs) has received relatively little attention. This fact is surprising given that FDIs are likely to suffer more severely from informational asymmetries than trade (Javorcik et al. 2011). Whereas the economic theory tells us that migration and FDIs are substitute ways to match workers and employers located in different countries (Kugler & Rapoport 2011), the presence of a diaspora can foster the bilateral flow of information thus stimulating an efficient distribution, procurement, transportation and satisfaction of regulations. Kugler & Rapoport (2007) show that migration and FDI substitute each other from a static standpoint but complement each other from a dynamic perspective. To the extent that migrants integrate to the business community, a network can emerge whereby they connect potential investors and partners (both private and public) in various ways (Kugler & Rapoport 2011). Bhattacharya & Groznik (2008) show that *ceteris paribus*, the higher the number of immigrants from a particular country in the US, the higher the level of FDI from the US to that country. Javorcik et al. (2011) confirm their result using an instrumental variable (IV) approach. Burchardi et al. (2017) use US Census data on historical migrations and record a causal effect of the ancestral composition of US counties on both inward and outward FDIs. Chen (2015) uses German district-level data to show that a higher number of immigrants fosters the inflow of FDI from the immigrants' country of

¹See Rauch (2001) for an extensive literature review.

origin.²

This paper is complementary to the existing literature on the link between migration and FDI, but it innovates in a number of ways. First, using a novel data set on bilateral FDI, this seems to be the first attempt at exploiting the bilateral dimension of the problem instead of focusing on a single anchor country.³ Second, though the findings on the topic are quite unanimous, it is not yet clear in which direction the effect should go. Outward FDIs do indeed correlate with inward FDIs and immigrants could affect either of the two indirectly via the effect they have on the other one. My results suggest that although an effect exists in both directions, it persists when looking at net outward FDIs, suggesting that the presence of immigrants leads to higher net investments in their country of origin. Third, the empirical analysis focuses on the possible heterogeneity of the link between FDI and immigration. If migrants do indeed help to reduce informational barriers between countries, we should see that the impact that they have on migration flows is stronger for those situations in which informational asymmetries are more pronounced. Whereas some research has tried to disentangle the role of language frictions (Chen 2015, Luecke & Stoehr 2015, Burchardi et al. 2017), an encompassing analysis of different aspects pertaining to informational asymmetries is still lacking.⁴ In this paper, I aim at closing this gap in the literature and exploring through which channels migrants might foster bilateral FDIs. Fourth, the empirical methodology explicitly addresses the bias arising from the presence of zeros in bilateral matrices and possible endogeneity issues.

The rest of the paper is organized as follows: Section 2 outlines the theoretical

²Buch et al. (2006) also find a similar result using German state-level data.

³Luecke & Stoehr (2015) observe the short-term FDI migration link using bilateral OECD data. However their analysis only includes a maximum of 48 non-OECD countries and therefore excludes aspects related to the north-south link.

⁴Specifically, I show that measures of linguistic distance used in previous research do not reflect a commonality of spoken languages but instead correlate very strongly with (and thereby proxy for) other (more accurate) measures of cultural distance.

framework for the analysis and Section 3 presents the data; I show the empirical specifications in Section 4 and present the findings in Section 5. Section 6 concludes.

2 Theoretical Framework

In order to better understand the context of the analysis, this section presents a simple theoretical framework to derive three main hypotheses and relates them to the existing literature.

When taking an investment decision, an investor from country i selects a country j in order to maximize its (expected) profits. Profits depend on both the investor's own qualities, the country where it resides and the country where it invests. Specifically, an investor n from country i investing in country j expects profits $\pi_{n,i,j} = r_{nj} - c_{nij}$ where r_{nj} is the (expected) revenue and c_{nij} is the (expected) cost. For ease of exposition, I assume that revenues do not depend on the country of origin i but only on the characteristics of the investor (such as its productivity and the industry in which it is active) and of the host country (e.g. growth rate, unemployment rate, institutional quality ...).⁵ Total cost instead depends on the characteristics of the investor, country of origin and destination but also bilateral aspects. Specifically, information-gathering, set-up and compliance cost are going to be relevant for the investment decision and they are likely to vary depending on the origin and final location of the business, and on an interaction

⁵This amounts to saying that the characteristics of the country of origin i impact all investors from that country in the same way and do not affect the revenues in such a way that might influence the investors' decision about where to invest. This assumption reflects the fact that investors from a given country decide whether and where to invest based on their prospects and the ones of the possible receiving country. During this decision-making process, every investor takes his origin country as a given. The literature on the topic confirms that it is the quality of the receiving-country legal and institutional environment that matters for attracting foreign investments (Aizenman & Spiegel 2006, Bénassy-Quéré et al. 2007, Daude & Fratzscher 2008).

of both.

North (1994) defines institutions as the “humanly devised constraints that structure human interactions.” Such constraints can be both informal or formal. According to this definition, institutions entail norms of behaviour and conventions but also rules, laws, constitutions and their enforcement characteristics. In other words, institutional characteristics are shaped by cultural and legal aspects of a society. On the one hand, capital tends to flee countries with a bad institutional quality and move towards countries with a better legal and institutional framework (Lucas 1990, Alfaro et al. 2008). On the other hand, a better institutional and legal framework facilitates the formation of MNEs and the inflow of investments of any kind (Bénassy-Quéré et al. 2007). Moreover, institutional and cultural distance between countries might matter just as much as institutional quality. The literature has highlighted that institutional distance has a negative impact on FDI flows (Bénassy-Quéré et al. 2007). This link is due to the fact that individuals learn how to deal with the type of institutions to which they are exposed in their home country and then have an easier time understanding the foreign institutional framework if it is similar to the one of their home country (Habib & Zurawicki 2002). Cultural distance also plays a large role in determining bilateral economic exchanges. First, individuals have more economic interactions with partners whom they trust and trust is higher when partners share a common heritage (Zingales et al. 2009). Second, higher cultural differences lead to higher asymmetries of information, thus increasing the cost of economic exchanges (Melitz & Toubal 2014, Fensore et al. 2017). The presence of a home-bias in international investments confirms the relevance of cultural differences (Tesar & Werner 1995, Coval & Moskowitz 2001). Given that FDI are the most information-sensitive type of investments (Stein & Froot 1991, Harris & Ravenscraft 1991, Daude & Fratzscher 2008), it is clear that cultural distance has a negative impact on bilateral FDIs.

Following the literature on migration, networks and trade, Migrants from country i in country j might be able to help potential investors in gathering information, understanding the legal framework and learning how to comply with it. This means that the larger i 's diaspora in j , the lower the potential investor's cost.

Henceforth I assume that the total costs c_{nij} of investor n in country i investing in country j depend on five main elements: the investor's characteristics c_n , the home and host country legal and institutional framework (I_i and I_j , respectively), the proximity $Prox_{ij}$ between the home and host country and the size of the home diaspora in the destination country mig_{ij} .

Given the definition of revenues and costs, I can write $\pi_{nij} = f(c_n, I_i, I_j, Prox_{ij}, mig_{ij})$ with the following main assumption:⁶

$$\begin{aligned}\frac{\partial \pi_{nij}}{\partial mig_{ij}} &< 0 \\ \frac{\partial \pi_{nij}}{\partial Prox_{ij}} &< 0 \\ \frac{\partial \pi_{nij}}{\partial I_j} &> 0\end{aligned}\tag{1}$$

Given that firms maximize profits, they will invest in countries where costs are lower i.e. where the diaspora is larger, proximity is greater and institutional quality is higher.⁷

An additional important aspect of production cost is the differential role that migrants play within different cultural and institutional frameworks. Specifically, research has pointed out that networks arise as a response to problems of contract

⁶Note that I do not make any assumption about the direction of the influence of I_i on total costs as the literature on the topic is inconclusive. See for instance Alfaro et al. (2008) and Bénassy-Quéré et al. (2007).

⁷This results holds as long as measures of migrants, proximity and institutional quality do not affect revenues negatively. Given previous literature on trade and investors' choices, I have no reason to believe that a greater diaspora, proximity or institutional quality would have a negative impact on revenues.

enforceability and coordination, thus compensating for the presence of asymmetric information, incomplete contracts and limited legal contract enforceability (Greif 1993). First, the importance of networks increases with higher (perceived) bilateral distance (Greif 1989). To understand this latter point, note that trust is built out of two main components: ascribed and earned trust (Schmitz 1999). Trust is “ascribed” whenever it is based on the intrinsic characteristics of the business partner, such as ethnic, religious or linguistic group. In contrast, “earned” trust is based on reputation and derives from past bilateral relationship and/or past outcomes. Networks increase ascribed trust whenever it is lacking (i.e. when the proximity between countries is low) and provide a basis for earned trust, whenever past contact is lacking (Greif 1993). Second, the role of migrants networks could be shaped by the quality of the institutional framework. Networks have allowed the formation of trading and investment relations thanks to the presence of shared informal rules and the ability to credibly threaten collective punishment. These characteristics acquire higher importance in situations in which the legal framework is weak and cannot provide the necessary frame for economic relations (Greif 1989, 1993, Wang 2000, Rauch & Trindade 2002).

The role of informational asymmetries — Once I allow for migrants to have a differential impact based on bilateral and country-specific characteristics, the profit function looks as follows: $\pi_{nij} = f(c_n, I_i, I_j, Prox_{ij}, mig_{ij}, I_i \cdot mig_{ij}, I_j \cdot mig_{ij}, Prox_{ij} \cdot mig_{ij})$. If migrants do indeed help in reducing informational asymmetries between countries, then the data should confirm the following three main hypotheses:

1. The effect of migration on FDI is larger, the lower the cultural and institutional proximity between countries. $\forall Prox_{ij}^L < Prox_{ij}^H$:

$$\frac{\partial \pi_{nij}}{\partial mig_{ij}} \Big|_{Prox_{ij}^L} > \frac{\partial \pi_{nij}}{\partial mig_{ij}} \Big|_{Prox_{ij}^H}$$

Investors need more time to familiarize with the foreign culture and institutions (higher c_{nij}) when the bilateral proximity is lower. The presence of an integrated migrants group might alleviate the feeling of distrust and ease the flow of information. I henceforth expect the effect of migration on FDI to be larger when country pairs are very different in terms of institutional framework and cultural background.⁸

2. The interplay between the institutional framework and the role of migrants networks has remained largely unexplored in the literature and there are no conclusive results on this topic. Due to high sunk cost, FDIs are especially vulnerable to any form of uncertainty, whether stemming from poor government efficiency, rights protection or the legal system (Bénassy-Quéré et al. 2007). On one side, migrants can contrast the negative effect of weak institutions on investments by providing an alternative informal institutional framework (Greif 1993, Wang 2000). In this case migration would help allocating capital from countries with better institutions to countries with worse institutions:

$$\frac{\partial \pi_{nij}}{\partial mig_{ij}}|_{I_i^H} > \frac{\partial \pi_{nij}}{\partial mig_{ij}}|_{I_i^L} \text{ and } \frac{\partial \pi_{nij}}{\partial mig_{ij}}|_{I_j^L} > \frac{\partial \pi_{nij}}{\partial mig_{ij}}|_{I_j^H}$$

where i is the country of origin and j the country of destination of both FDI and migrants.

On the other side, migrants can provide information on outside options whenever the quality of the investment framework in the home country is low (Cuadros et al. 2016). In this case, migration would help allocating capital from countries with worse institutions to countries with better institutions

⁸Kugler et al. (2013) also consider cultural proximity as a source of heterogeneity in their analysis.

and we should observe that

$$\frac{\partial \pi_{nij}}{\partial mig_{ij}}|_{I_i^L} > \frac{\partial \pi_{nij}}{\partial mig_{ij}}|_{I_i^H} \text{ and } \frac{\partial \pi_{nij}}{\partial mig_{ij}}|_{I_j^H} > \frac{\partial \pi_{nij}}{\partial mig_{ij}}|_{I_j^L}$$

where i is the country of origin and j the country of destination of both FDI and migrants.

I will investigate the two conflicting hypothesis and show whether migrants help alleviating or exacerbate the Lucas paradox (Lucas 1990).

3. The effect of migration on FDI should be larger, the larger the size of the diaspora. Whenever an investor n in country i is looking to expand his operations in a foreign country $j \in J$ (where J is the set of all countries) he will evaluate its revenue prospects in country j but also its total costs w.r.t. other possible destinations. Ceteris paribus, the higher i 's diaspora in j the lower n 's costs for investing in j :

$$\frac{\partial \pi_{nij}}{\partial mig_{ij}^2} > 0$$

3 Data

In this section, I describe my data sources and provide descriptive statistics on all variables employed in the analysis. My empirical work is based on a novel data set which contains information on international bilateral FDIs and migration stocks, country characteristics, and numerous measures of cultural, institutional and geographic distances. I explain the source and definition of each part separately.

3.1 Migration Data

I take data on bilateral migration from Artuc et al. (2015). They collect census data for 60 countries in 1990 and 100 countries in 2000. The resulting data set includes bilateral migration stocks by country of birth, skill category and gender. This is the first data set offering a broad range of bilateral data on migration on countries other than OECD. This aspect is relevant because *i)* it allows me to analyse the impact of migratory flows on FDI for a greater number of countries; and *ii)* although migration to non-OECD countries increased at a lower pace than migration to OECD countries in the last 20 years, immigrants in non-OECD countries constitute some 40% of the world adult migration stock.

Additionally, I use bilateral world migration data provided by the World Bank (Özden et al. 2011). The data set includes decennial bilateral migration stocks disaggregated by gender for the period 1960-2000. The major shortcoming of the WB data is that there is no breakdown by education level. For this reason, I use the data provided by Artuc et al. (2015) in the main analysis and only use the WB data in section 5.4.

3.2 FDI Data

For what concerns FDIs, I use a newly available data set published by UNCTAD in April 2014. This data set provides bilateral data on bilateral inflow, outflow, in-stock and out-stock of FDI for 206 countries for the period 2001-2012. For the purpose of my analysis, I will concentrate on FDI stocks rather than flows. There are three main reasons why I choose this approach. First, stocks are much less volatile than flows. In small countries, even takeovers can have a major influence on the FDI flows. Second, the decision of international investors is about which

funds to allocate and where, hence it is a stock decision, not one of flow. Third, Bénassy-Quéré et al. (2007) suggest that stocks are a better measure of capital ownership because they account for FDI being financed through local capital markets.⁹

Additionally, stocks are better-suited for the empirical methodology that I employ. Indeed, FDI flows often take negative values, thus rendering the estimation strategy more cumbersome than FDI stocks, which mostly have a zero lower bound.¹⁰

3.3 Country Information

I merge FDI and migration data with country-level information from Fensore et al. (2017). They use the Penn World Table (PWT) 9.0 as primary source for GDP and population data, integrating it with the World Development Indicators and UNdata as second and third additional sources, respectively. The authors only use the secondary and tertiary data sources to predict the GDP or population values that are missing in the PWT. This makes the GDP (per capita) values comparable even if they stem from different sources. To account for trade policy, free trade areas (FTA) as well as political unions, we extend the list of variables by dummy variables for each country's membership in the WTO, EU, NAFTA, EFTA, AFTA, and Mercosur.

The literature on the effect of policies and institutions highlights that governance infrastructures are an important determinant of FDIs and influence the degree to which multinationals emerge and invest abroad (Globerman & Shapiro 2002). In order to take account of this fact and to observe whether migrants

⁹See also Devereux & Griffith (2002).

¹⁰There are some cases in which even FDI stocks are below zero, but they are less than 4 percent of the total number of observations.

can actually convey enough information to make up for an ill-designed institutional framework, I include data on business climate developed by Kaufmann et al. (2010) in the context of the World Development Indicators (WDI) project of the World Bank. The data set reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996-2014, for six dimensions of governance. The indices are highly correlated with each other such that it is very difficult to use them all in a single equation. For this reason, I will only include one of them in the main specification and consider the others in section 5.3.

Habib & Zurawicki (2002) indicate that differences in the business climate matter for FDI just as much as the quality of it. They suggest that individuals learn how to deal with different institutional challenges and that the skills they learn at home make it easier for them to invest in foreign countries when the institutional quality is similar. For this reason, I build a measure of bilateral governance distance based on the WDI indicators. Given the literature on determinants of FDI, I include bilateral differences in Corruption Control as my preferred indicator and include the other ones as a robustness check.

3.4 Gravity Data

The *Centre d'Études Prospectives et d'Informations Internationales* (CEPII) provides three databases (Gravity, GeoDist and Language) that comprise country information as well as bilateral and gravity variables. The former includes each country's continental location, currency as well as a dummy for being landlocked. The bilateral variables provide information on different measures of bilateral distance¹¹, contingency, common official languages, colonial ties, common currencies,

¹¹This paper uses the geodesic distance between largest cities as preferred measure of geographic distance between countries. Alternative measures include a weighted geodesic distance

and legal origins.

Previous research has outlined the importance of familiarity measures for both FDI decisions (Daude & Fratzscher 2008). In order to control for the degree of familiarity between countries and to observe whether migrants' role depends on the degree of familiarity between countries, I include measures of bilateral cultural distance from different sources. Following previous literature, I include measures of linguistic, religious and genetic distance as proxies for cultural distance (Guiso et al. 2009, Spolaore & Wacziarg 2009, Felbermayr & Toubal 2010, Spolaore & Wacziarg 2015).

Data from the CEPII includes information on bilateral linguistic differences. Specifically, the Language database includes three language dummy and two linguistic proximity measures. By definition, the dummy variables do not convey as much information as a distance measure based on different characteristics of the spoken languages. For this reason, I prefer to use linguistic proximity in the analysis. The first of the two measures provided by the CEPII (LP1) is determined as an index based on language trees. Every language belongs to a set of families according to its different characteristics and the higher the number of common families, the more similar two languages are. This approach rests on a strong cardinality assumption over branches of the trees and offers only low variation in distances. The second CEPII measure (LP2) is based on the Levenshtein distance, which considers the difference in pronunciation of words having the same meaning in two different languages. Though based on phonetics, the resulting measure also correlates with grammatical similarities between languages and does not depend on a single anchor language or ancestor. The LP2 measure might seem the most appealing for the analysis, however, it correlates negatively with the index of common national language and only has a 12 percent correlation with the

based on the population and are all highly correlated. The results that I present do not depend on the specific measure of choice.

index of common spoken language Melitz & Toubal (2014). By construction, the LP2 measure actually reflects more the degree of cultural proximity rather than the ease of communication between different populations. Given that I consider ancestral distance to be a good proxy for cultural distance (see below), I use the index of common spoken language as a measure of linguistic similarity.¹²

For what concerns religious similarity, I follow the approach of Helpman et al. (2008) and build an index of religious similarity based on three main world religions: Protestantism, Catholicism and Islam.¹³ I retrieve data on the number of adherents to each religion from the World Religion Dataset by the Association of Religion Data Archive (ARDA). For every country pair, I define religious similarity for every country pair as the probability that two random individuals from the two countries share the same religion.

Recent works have emphasised the role of ancestral distance in shaping economic outcomes. Specifically, the literature has shown that ancestral relatedness has an impact on the diffusion of technology, trade and FDI decisions as well as the probability to engage in international conflicts (Spolaore & Wacziarg 2009, Guiso et al. 2009, Burchardi et al. 2017, Spolaore & Wacziarg 2016). In light of these results, ancestral distance appears to be an important driver of bilateral relations, which could affect not only FDI patterns but also migration decision. For this reason, I add data on genetic distance as a proxy for ancestral relatedness between populations. I use a bilateral data set on genetic distance provided by Spolaore & Wacziarg (2017). The authors combine information on genetic difference between world populations (Pemberton et al. 2013) with information on the ethnic composition of countries (Alesina et al. 2003). With information on 267

¹²The qualitative result remain unchanged when using different measures of linguistic distance between countries.

¹³Whereas one might argue that the three main religions do not adequately reflect the full extent of religious diversity in the world, previous literature has emphasised that they are the most relevant when it comes to international frictions (Lewer & Van Den Berg 2007).

world populations and more than 100 countries, the data set provides information on genetic distance for 29,412 country pairs.

3.5 Descriptive Statistics

I show the descriptive statistics for the variables in my data set in Table 1. Overall, I have information on 186 countries, though the sample is not balanced due to missing values at the bilateral level for both FDI and migration data.

— Table 1 about here —

The average per-capita GDP is 5'303\$. As the table shows, in most cases I have information at both the country- and the bilateral level.

4 The Empirics of Migration and Investment

In this section I illustrate the empirical strategy and the specification of the model implemented in section 5.

4.1 Empirical Specification

For the empirical estimation I will implement a gravity model. The use of gravity equations to study FDI is well-established in the international economics literature. Researchers have relied on this kind of models to investigate the determinants of FDI with bilateral country-level data, taking market size and geographical distance as explanatory variables. One possible weakness of gravity models

is that they rely on a bilateral framework and do not allow to take into consideration drivers of FDI that relate to third countries. This aspect renders gravity models inadequate to investigate models of export-platforms FDI¹⁴ or models of complex vertical FDI chains.¹⁵ For these reasons, different authors have recently applied spatial-econometrics models to investigate determinants of FDIs. Most of the studies indeed find that spatial interdependence is relevant for FDI decisions. Blonigen et al. (2007) present a concise summary of the literature and specifically address the issue of estimation bias due to the omission of spatial interactions in FDI regressions. They modify the standard gravity model by adding a dependent variable summarising the GDP of other countries (weighted by their distance to the host country) and a spatially lagged dependent variable: $W \cdot FDI$. W is the spatial lag weighting matrix in which every term describes the weights based on the distance between any two host countries, FDI is the stock of FDI from the parent to the host country. This spatial interdependence term captures the proximity of the observed host to other hosts. In line with most recent findings, Blonigen et al. (2007) suggest that spatial interdependence is significant. However estimated relationships of traditional determinants of FDI are robust to the inclusion of spatial interdependence terms. For this reason, I proceed to the main estimation with a standard gravity approach.

The standard empirical specification of the gravity model (see Anderson & van Wincoop (2004)) takes the following form:

$$FDI_{ij} = \alpha_0 Migration_{ij}^{\alpha_1} e^{\alpha_2 X_{ij}} e^{c_i + c_j} \quad (2)$$

FDI_{ij} denotes the stock of international FDI from country i to country j , $Migration_{ij}$

¹⁴Export-platform FDI occur when the parent country invests in a host country in order to serve third markets with exports of final goods produced in the host country. See Yeaple (2003), Ekholm et al. (2007) and Bergstrand & Egger (2007) for examples of such models.

¹⁵See Baltagi et al. (2007) for a definition.

is the stock of individuals from country i living in country j ,¹⁶ X_{ij} includes bilateral terms, which include measures of cultural and institutional distance as well as other bilateral control variables (like geographical distance and corruption differential), c_i and c_j are host and home country fixed effects, respectively.

4.2 Estimation method

In the international economic literature, the log-normal specification of gravity models is well established for the analysis of trade, investment and migration. However, this specification entails some methodological issues that have raised some concerns and received new attention in the past few years.

The perhaps most pressing problem of a log-normal gravity model is the presence of a large number of zeros in the bilateral matrices, since the logarithm of zero is undefined. Economists have usually employed two main strategies to deal with zeros. The most common way of “circumventing” the issue has been to omit zero values all together. This greatly simplified the empirical estimation, but had the obvious major drawback of producing biased estimates. Moreover, this strategy would not be a viable one when dealing with FDI because of the high incidence of zeros in country-pairs. A second approach, which is still used today, is the addition of a positive constant inside the logarithm on the l.h.s. in order to make sure that the logarithm is well defined. The drawback of this approach is that by inserting an ad-hoc variable we cannot be sure of the consistency of the estimate (Linders & De Groot 2006). A third approach that has recently received particular attention is the implementation of Poisson estimators. Santos Silva & Tenreyro (2006) proposed a Poisson pseudo-maximum-likelihood (PPML) estimator in the context of gravity models of trade and Head & Ries (2008) implemented

¹⁶Though this specification implies a focus on outward FDI and inward migration, I will discuss in the next section which type of FDI I will use in the main analysis.

their framework in the context of FDI. They find that a Poisson estimator yields smaller estimates due to the consideration of zeros, in lines with previous findings in the trade literature. Furthermore, the PPML estimator is robust to different patterns of heteroskedasticity, which is both quantitatively and qualitatively important in the log-linear specification, even when controlling for fixed effects (Santos Silva & Tenreyro 2006).

For these reasons, I will estimate the gravity equation by means of PPML estimator, with the main equation taking the following form:

$$FDI_{ji} = \exp\{\alpha_0 + \alpha_1 \ln(1 + Migration_{ij}) + \alpha_2 X_{ij} + c_i + c_j\} \quad (3)$$

4.3 Endogeneity issues

A major concern when investigating the relationship among macroeconomic variables like migration and FDI is endogeneity. Indeed, causality could go either way and the two variables are likely to have some common determinants. In order to address such issues, I will adopt an estimation strategy that takes endogeneity into account. First, I will always take a ten-years lag between the migration data and the FDI data. In this way I can reduce short-term endogeneity. Second, I will take migration data for 1990 and FDI data for 2001 as benchmark. During the 1980s many country pairs had no financial connections, which began during the 1990s after a wave of liberalization. As a result, 2001 data are less influenced by the political process.¹⁷ Still, it is possible that the factor that brought migrants to a specific country is the same one driving the flow of FDI some years in the future. For this reason I propose a third option: I will implement an instrumental variable (IV) approach to control for the endogeneity of the stock of immigrants.

¹⁷As a robustness check, I will look at later years as well.

More specifically, I will use the immigrants stock from 1960 as an instrument for the immigrant stock in 1990 (as proposed by Javorcik et al. (2011)) and use the methodology proposed in Carrère (2006). Note that given the difficult implementation of IVs with PPML estimators, I will use a log-linearised form of the gravity equation when implementing this strategy.

5 Findings

In this section I empirically investigate the effect of immigration on FDIs. I first present some descriptive evidence about the main relationships among variables. Once the basis is laid out, I illustrate the main results.

5.1 Descriptive Evidence

Before turning to econometric estimates, I briefly discuss the relationship between FDI and migration at the descriptive level. In Figure 1, I show the simple correlation between the out-stock of FDI and the out-stock of Migrants. I find a significant positive relationship. This suggests that countries tend to invest more in partners in which their diaspora is larger.

— Figure 1 about here —

However, Figure 2 shows that there exists a positive correlation between in-stock FDI and out-stock migrants as well. Given the relevance of bilateral factors for FDI decisions, inward and outward FDIs might be correlated and therefore the same factors might influence them both in a direct or indirect way.

— Figure 2 about here —

Indeed, Figure 3 shows a positive correlation between FDI out- and in-stock.

— Figure 3 about here —

These findings are consistent with the theoretical framework outlined in section 2. If we assume that international investments generate positive externalities, any investor n from country j investing in country i also diffuses some information about its home market j , thus reducing costs c_{nij}^S for i 's investors. Moreover, bilateral determinants of FDI might impact the ease of doing business and at the same time reduce relocation costs for individuals. Such bilateral factors would be the true drivers of investment strategies and migration decisions, thus making the link between migration and FDI spurious. These considerations highlight that in order to disentangle the effect of migration on FDI it is important to *i*) control for other bilateral economic outcomes, *ii*) control for bilateral determinants of FDI, and *iii*) consider how other bilateral factors affect the relationship of interest.

If migrants do have an positive impact on the allocation of FDI, we should observe that countries who have a higher number of immigrants also attract more direct investments. I explore this case in figure 4.

— Figure 3 about here —

Panel (a) shows that countries with a higher total number of emigrants stock also have higher total FDI out-stock. Panel (b) depicts the same relation using average stocks instead of totals. This preliminary evidence does not consider the fact that the total amount of both investments and migration is highly correlated

with the size of the host country, its economy and its growth prospects. However, the results hint to the existence of a link between FDI and migration, which I explore in more detail in the following sections.

5.2 Migration and FDI

In this section I present the main results of the analysis: I investigate whether emigrants are relevant for FDI decisions and in what way exactly. In order to be consistent with past literature (i.e. having approximately a time-span of 10 years between the data on immigration and FDI stock) and to avoid short-term endogeneity, I use 2001 data for FDI stocks and 1990 data for migration stocks as reference years¹⁸.

I estimate equation 3 for outward FDI stocks and present the results in Table 2. The coefficient for the log of migrants, the variable of interest, is positive and significant in all specifications. Column (1) shows the simple regression between the two variables of interest, Column (2) includes gravity and cultural distance variables whereas Column (3) also shows variables related to legal distance.

— Table 2 about here —

Standard theory on gravity equation tells us that the estimates are biased whenever FE are excluded from the regression. This is confirmed in the table by a drop in the coefficients in Column (4) once both origin and destination FE are included. Note that the effect of geographic distance has the right sign but loses significance once all the fixed effects are accounted for. This is in line with previous literature indicating that geography has a multifaceted impact on FDI,

¹⁸Results do not change qualitatively nor much quantitatively if I take some later measures of FDI.

with higher proximity reducing investment costs but fostering a substitution of FDI by exports (Brainard 1997, Habib & Zurawicki 2002). In order to understand what types of asymmetries matter, we can consider the bilateral variables that I have included in the analysis on table 2. Among all bilateral distance variables, only religious proximity and commonality of legal origin are significant. The two variables also have the expected sign once I include fixed effects. Whereas somewhat unexpected, these outcomes are in line with recent empirical findings. Different measures of cultural proximity are correlated with one another, thus one of them might capture the effect of the others (Spolaore & Wacziarg 2017, Fensore et al. 2017). Moreover, the effect of bilateral variables could be moderated by the number of migrants, a possibility that I explore in the next section.

One of the major issues with the gravity specification is the correlation that between FDI, migration and other economic outcomes. In order to appreciate how severe the bias might be, due to omitting one of these factors, I add them in the last three columns of Table 2. Following the descriptive evidence of presented above, I show in Column (5) that the effect of migration remains significant when controlling for inward FDI stocks. Specifically, it does not seem that the effect of migration is the result of the simple correlation between migration, inward FDI and outward FDI. In Column (6) I add the aggregate value of trade between host and home country. As expected, the variable is positive and significant and though the coefficient on migrants stock decreases in size, its effect remains positive and significant. Finally, given that I am using migrants stocks and not flows, and given the time-persistence of both migration and FDI patterns, it is possible that factors that attracted migrants in the distant past are attracting both migrants and investments at the time of the analysis. For this reason, I include the stock of migrants 30 years earlier as an explanatory variable in Column (7). Though this variable correlates with the stock of migrants in 1990, it does not seem to have an impact on FDI stocks in 2001, once more recent migration is accounted for.

All in all these preliminary results confirm the theoretical analysis outlined above. The coefficient for the stock of outward migration is always positive and significant for outstock FDI, suggesting that the presence of a diaspora fosters a country's investment opportunities in the host country. This is true even after controlling for inward investments from the host to the home country.

5.3 Effect Heterogeneity

In the previous section I have shown that emigrants have a positive effect on outward FDI. In this section, I explore whether the impact differs according to different factors outlined in section 2.

Educated Migrants — Kugler et al. (2013) point out that if investments decisions are indeed information-sensitive, migrants can only foster investments insofar as they *i)* have deep knowledge about the home country and can constantly improve it, *ii)* have high enough communication skills to exchange the crucial information with the relevant partners. This means that the effect of immigrants on FDI decisions should be stronger, the higher the number of highly-educated immigrants.

— Table 3 about here —

As a first step, I investigate the aforementioned hypothesis by repeating the analysis of the previous section considering only immigrants with at least 12 years of education. I present the results in Table 3. In all specifications, the impact of highly-educated immigrants is larger than the one for all immigrants. This result confirms that informational asymmetries are indeed relevant for FDI and that immigrants can (and do) help alleviating them.

The number of Migrants — When it comes to the strength and persistence of the effect of migrants on FDI, it is important to distinguish between the intensive and the extensive margin. As highlighted in section 2, whereas the effect of migrants becomes less relevant for every single investor who has entered the market (c_{nij}^S becomes zero after the investment is made), it remains constant and positive for all potential investors ($\partial c_{nij}/\partial mig_{ij} < 0$) and for the further compliance costs that firms face after entrance (c_{nij}^A). As a result, the effect of migrants on FDI should be concave at the extensive margin (as more and more foreign firms have already made the initial investment), but positive at the intensive margin as new and old entrants make more investments. Recent literature has emphasised the concavity of the effect of migrants on FDI at the extensive margin (Burchardi et al. 2017). However, the possibility of a different functional form at the intensive margin has not been explored.

— Table 4 about here —

Column (2) of Table 4 shows the results of adding squared migration to my main specification from section 5.2. The coefficients indicate that the link between migrants and the value of FDI is larger, the larger the number of migrants. This is consistent with my theoretical framework and complementary to previous literature on the topic.

Institutional Distance — In order to explore a possible heterogeneity of the migration effect, I add interaction terms for different institutional and cultural distance measures in Table 4. This means that I estimate the following equation:

$$FDI_{ji} = \exp\{\alpha_0 + \alpha_1 \ln Mig_{ij} + \alpha_2 X_{ij} + \alpha_k Mig_{ij} \cdot X_k + c_i + c_j\} \quad (4)$$

Where X_k is one of the k bilateral variables for which I generate the interaction.

With the exception of common language in Column (3), all interaction terms are significant and have the expected sign. Also, it seems that the interaction with the immigration variable is relevant for all cultural and institutional factors, as the variables become significant once I introduce the interaction variable in the specification.¹⁹

My analysis shows that immigrants foster investments from their home to their host country, and that this effect is larger when the home and host countries differ more in terms of cultural and institutional characteristics. To the best of my knowledge, this is the first paper to investigate not only the role of cultural differences on the migration-FDI link, but to account for the role of ancestral distance on informational asymmetries and investment decisions²⁰. In this sense, the findings above complement the existing work on ancestral relatedness, which constitutes a form of barrier to the flow of information (Spolaore & Wacziarg (2017)), goods (Fensore et al. 2017) and investments. Such barrier seems to be of a different nature than the other cultural and institutional measures can capture.

Institutional Quality — In a context of weak Institutions, migrants might help in fostering economic relationships through the building of networks. The latter can supply for a poor legal framework by fostering implicit contracts and a social scheme of rewards and punishment. In this case, we should see that the number of migrants has a larger impact on FDI, the worse the quality of institutions in the host (receiving) country.

— Table 5 about here —

¹⁹I add the interactions terms in different columns in order to avoid collinearity between variables and their effect. A robustness test including all interactions together yields very similar results and is available from the author upon request.

²⁰Burchardi et al. (2017) do investigate the role of ancestors on investments. However, they do not make a difference between migration and ancestral relatedness and define migration as a function of ancestral relatedness between populations.

Columns (2) to (5) in Table 5 show the results of four PPML regression of my preferred specification with the addition of interaction terms reflecting the institutional quality of the host country. All coefficients have positive and significant coefficients (except for the Regulatory Quality index), indicating that migration has a stronger effect, the higher the institutional quality of the host country. This result indicates that migrants are not very effective in making up for a weak institutional framework and that they intensify the role that institutions play for investments ²¹. In order to corroborate this result, I look at whether the effect of migrants differs according to the institutional quality of the origin country and show the results in Columns (6) to (9) of Table 5. In this case, the coefficient is negative for all variables (though only significant in two cases), indicating that migrants play a larger role for investment decisions, the lower the institutional quality of their home country. Weak institutions hinder investments and in particular the ability of domestic firms to emerge as multinationals and invest abroad (Globerman & Shapiro 2002).²² By sharing their expertise about regulation, customs, procedures and local finance, migrants can reduce cross-border investment barriers and possibly transaction costs. The previous paragraphs confirmed that migrants do reduce barriers between countries and this section confirms that the effect mostly occurs through the informational asymmetries channel.

FDI and Portfolio Investments — In his seminal paper, Rauch (1999) proposed a network/search view of international trade and showed that lower proximity between countries results in higher barriers to trade. Specifically, he pointed out that bilateral cultural and institutional distance matters more for differentiated rather than homogeneous goods. Rauch (1999) suggests that products traded on an organised exchange are homogeneous enough, that buyers will

²¹Bénassy-Quéré et al. (2007) shows that ‘good’ institutions always attract FDI.

²²This result is related to the strand of literature trying to explain the “Lukas Paradox” (Lucas 1990). See for instance Alfaro et al. (2008), who shows that low institutional quality is a main reason why capital flows from poor to rich countries. My analysis highlights that the negative effect of institutional quality could be even exacerbated in the presence of a diaspora.

purchase the cheaper product whenever the price differential is higher than the difference in transportation costs. In contrast, commodities that do not possess referenced prices are differentiated enough that the price information alone does not convey all necessary information about the characteristics of the product. In this latter case, individuals who possess superior information might convey it to sensitive buyers, thus fostering trade in the presence of informational asymmetries. Rauch & Trindade (2002) confirm this hypothesis by showing that Chinese Networks foster international trade and more so in the case of differentiated rather than homogeneous goods.

When considering FDI projects, we can observe that they “bear the same relationship to portfolio investments as differentiated products do to homogeneous products” (Rauch 1999). Indeed, whereas foreign direct investors can take innumerable different ownership stakes across a countless number of commodity classes, portfolio investors choose debt or equity stakes that are offered by an issuing agency on an organized market. Moreover, any passive portfolio investment is generally little information-intensive and can be readily financed also with external funds. The same does not hold true for direct investments, which require a larger amount of information and where there are likely to be significant asymmetries. (Stein & Froot 1991, Daude & Fratzscher 2008) As a consequence, I expect a higher effect of emigration on FDI rather than on portfolio investments, if migrants constitute a bridge for missing information. To this end, I merge bilateral portfolio data from the Coordinated Portfolio Investment Survey (CPIS) of the IMF with my FDI data and run my main regression for portfolio investments.

— Table 6 about here —

Table 6 replicates the first four columns of Table 2 using the stock of all portfolio investments in 2001 as dependent variable. Whereas in the first three

columns the magnitude of the effect is similar to the one reported for FDI, the coefficient on migrants drops once I include all fixed effects and it is significantly smaller than the one of Column (4) in Table 2. As expected, migrants have a larger effect on FDI than on portfolio investments, which is consistent with my main hypothesis that migrants help in reducing informational asymmetries and confirms that FDIs are more information-intensive than other forms of investment (Aizenman & Spiegel 2006, Bénassy-Quéré et al. 2007, Javorcik et al. 2011).

5.4 Robustness

In this section I conduct some further empirical investigations in order to assess the robustness of the findings.

Different estimation method I have derived the results above by mean of PPML estimation. Notwithstanding the inclusion of fixed effects, the results could be biased due to the possible simultaneity of the investment and migration decision. For this reason, I carry out an instrumental variable (IV) estimation using the migrant stock of 1960 as an instrument for the migrant stock in 1990. Given that Poisson method does not lend itself easily to instrumental variable estimation (Bénassy-Quéré et al. 2007), I will carry the IV estimation using the log-linearised version of the gravity equation from the main analysis. The first two columns of table 7 show the results. Emigrants and geographic distance remain significant even after properly accounting for fixed effects (column (2)). On the institutional side, common legal origins positively affect FDIs whereas a higher differential in the implementation of the rule of law hinders them.

FDI flows I the main analysis I have used data on netto FDI outstocks for reasons described above. Nevertheless, stock data naturally include investments that were done in the distant past. If countries have invested a lot in the origin

countries of migrants at the moment in which migration occurred, it could be true that both the investment and the migration decision were driven by a third factor which we do not necessarily observe. In order to control for this aspect, I use netto FDI outflows instead of outstocks. Specifically, in table 7 I show the results of regressing the average FDI outflow of years 2001/2012 on the stock of immigrants in 1990 and the control variables used in the main analysis. Columns (5) to (8) confirm the findings of the main analysis, with the coefficients on migration being larger and cultural-distance variables playing a greater role than estimated above.

6 Conclusion

The effect of migratory flows on other macroeconomic variables has recently raised the interest of international economists. Whereas the relation between migration and trade and trade and investment has been thoroughly explored, very little has been done to understand how migratory flows and investments are related.

This paper explores the relation between immigration and foreign direct investment patterns. Specifically, I investigate whether migration contributes to the reduction in informational asymmetries between countries, thus increasing the scope for FDI.

By means of a PPML estimation method I show that emigration positively affects outgoing FDI stocks, with home countries investing more in the host countries of migrants. The results also hold when using FDI flows instead of stocks and when using an instrument to control for possible endogeneity with respect to the migration and investment decisions.

Furthermore, I provide evidence that immigrants do indeed foster investments

by reducing informational asymmetries. I show that the effect on investments is larger for highly-educated immigrants and for country pairs who have a larger ancestral distance.

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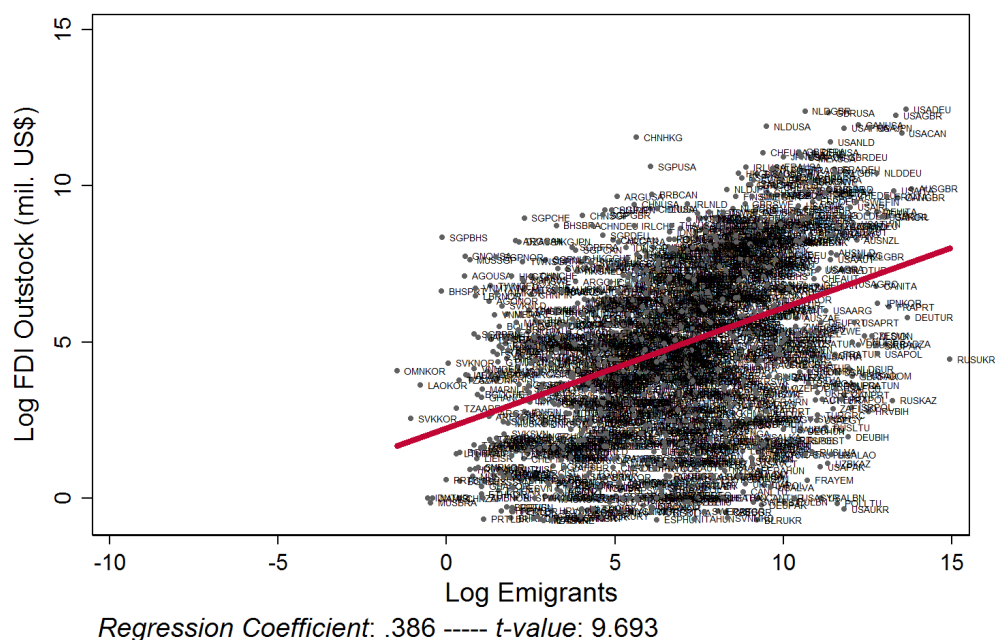
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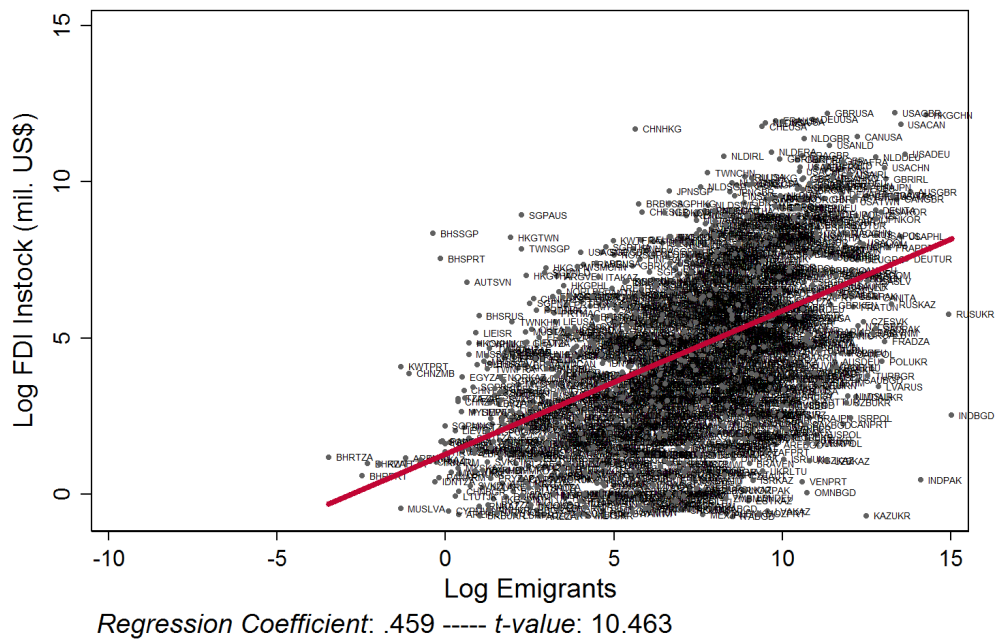
Figures and Tables

Figure 1: Outward FDI and Emigrants Stocks



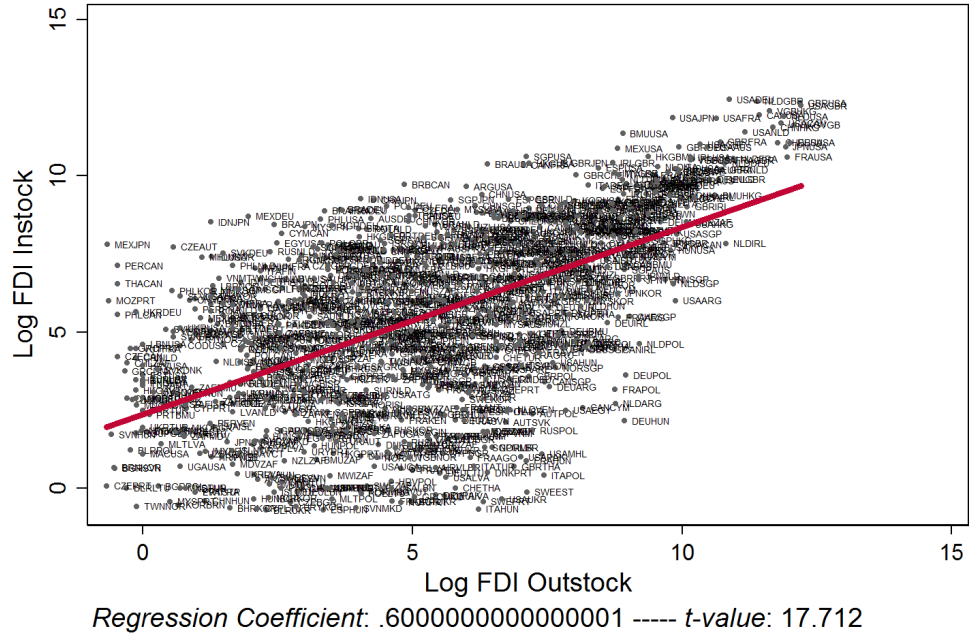
Note: For every country pair i, j , the figure shows country i 's immigrants from country j on the x-axis and the respective FDI stock from country j to country i in 2001 on the y-axis. Standard errors for t-value are clustered at the origin country.

Figure 2: Inward FDI and Emigrants Stocks



Note: For every country pair i, j , the figure shows country i 's immigrants from country j on the x-axis and the respective FDI stock from country i to country j in 2001 on the y-axis. Standard errors for t-value are clustered at the origin country of migrants.

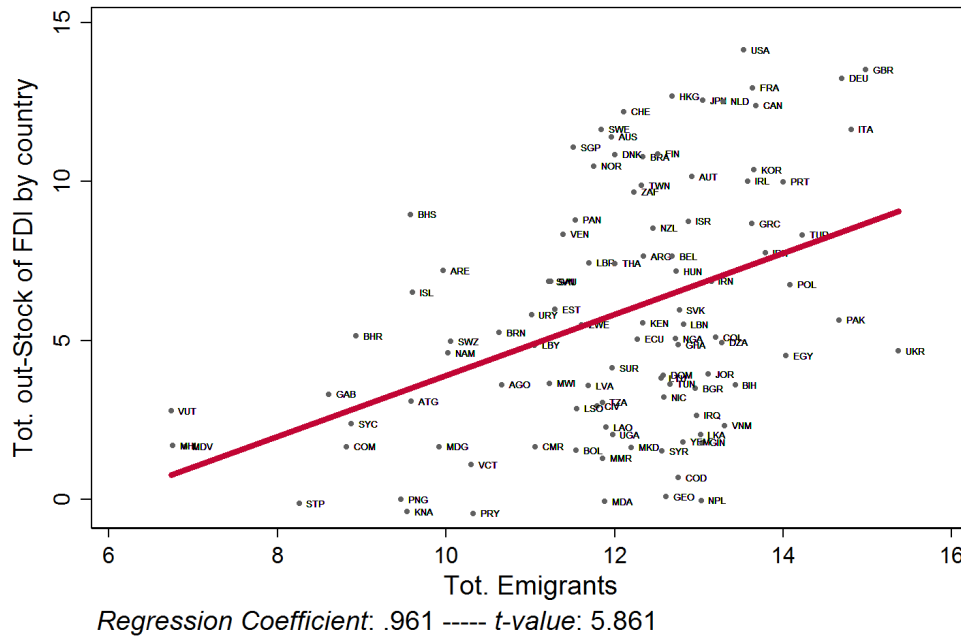
Figure 3: Inward and Outward FDI



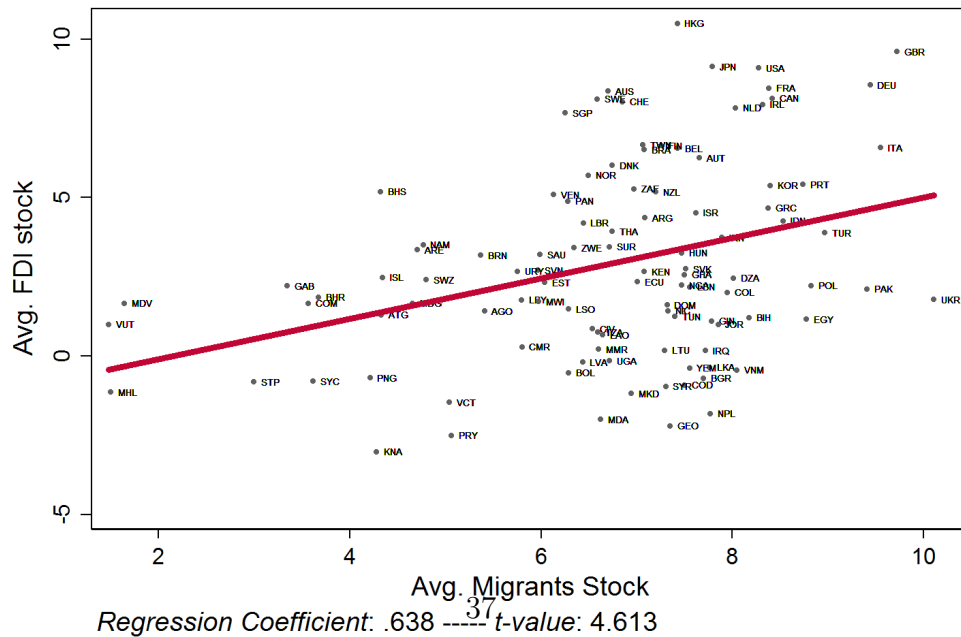
Note: For every pair of countries i and j , the figure shows FDI in-stock (on the x-axis) and FDI out-stock (on the y-axis) from country i to country j . Standard errors for t-value are clustered at the origin country of migrants.

Figure 4: Relations by country

(a) Tot. FDI - Tot. Emigrants



(b) Average FDI - Average Emigrants Stock



Note: The figure shows each country's migrants in-stock on the x-axis and its respective FDI out-stock on the y-axis. I display the total and the average FDI in-stock and Migrants out-stock in Panels (a) and (b), respectively. Standard errors for t-value are clustered at the origin country of migrants.

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
<i>Part I: Country-Level Variables</i>					
Population host (mil.)	31.96	121.82	0.05	1271.85	192
GDP host (mil. 2001 USD)	169484.19	826966.22	48.52	10075900	186
Control of Corruption (host)	-0.02	1	-1.91	2.59	194
Strength of Rule of Law (host)	-0.04	1	-2.31	1.94	199
Government Effectiveness (host)	-0.02	1	-2.32	2.17	194
Regulatory Quality (host)	-0.03	1	-2.52	2.12	194
GDP home (mil. 2001 USD)	169484.19	826966.22	48.52	10075900	186
Population home (mil.)	31.96	121.82	0.05	1271.85	192
Control of Corruption (home)	-0.02	1	-1.91	2.59	194
Strength of Rule of Law (home)	-0.04	1	-2.31	1.94	199
Government Effectiveness (home)	-0.02	1	-2.32	2.17	194
Regulatory Quality (home)	-0.03	1	-2.52	2.12	194
<i>Part II: Bilateral Variables</i>					
Distance (weighted, km)	8409.65	4671.18	1	19781.39	47524
Common Border	0.02	0.13	0	1	32282
Ever in colonial relationship	0.01	0.1	0	1	49729
Common Colonizer	0.11	0.31	0	1	32282
Colonial relationship in 2001	0	0.04	0	1	49729
Colonial relationship in 1990	0	0.05	0	1	49729
Colonial relationship since 1945	0.01	0.09	0	1	32282
Same country (now or past)	0.01	0.09	0	1	49729
RTA in 2001	0.04	0.19	0	1	49506
RTA in 1990	0.01	0.1	0	1	49506
Common Currency in 2001	0.02	0.13	0	1	49729
Common Currency in 1990	0.01	0.11	0	1	49729
Hours of difference	5.03	3.5	0	12	49729
Common Legal System	0.2	0.4	0	1	28950
Common Legal Origin	0.28	0.45	0	1	49288
Genetic Distance	0.04	0.02	0	0.09	30450
Common Spoken Language	0.12	0.23	0	1	37830
Religious Proximity	0.16	0.22	0	0.99	28950
Corruption Control Differential	1.1	0.88	0	4.5	38012
Strength of Rule of Law Differential	1.14	0.82	0	4.25	39985
Government Effectiveness Differential	1.12	0.85	0	4.5	38012
Regulatory Quality Differential	1.13	0.84	0	4.64	38012
<i>Part III: FDI and Migration Variables</i>					
FDI out-stock in 2001	1197.14	9536.43	-533.19	198656.93	4173
FDI in-stock in 2001	1340.54	10547.98	-547	253384.62	3974
Stock of Immigrants in 1990	2291.17	40457.14	0	3365718.75	37442
Stock of Immigrants in 2000	2978.9	52503.47	0	6319139	37442
Stock of Immigrants in 1960	1782.32	57518.56	0	8662538	52212
Stock of Educated Immigrants in 1990	433.77	6892.26	0	496276	37442

Table 2: Migration and FDIs

Outward FDI - Stock in 2001							
Mean of dep. variable	1'312.836	1'442.241	1'442.241	1'525.814	1'536.567	2'424.559	1'525.814
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log Emigrants 1990	0.540*** (0.078)	0.34*** (0.05)	0.32*** (0.05)	0.15*** (0.04)	0.13*** (0.04)	0.10** (0.04)	0.13*** (0.05)
Log Geographic Distance		-0.58*** (0.21)	-0.53*** (0.17)	-0.21* (0.11)	-0.13 (0.11)	-0.11 (0.11)	-0.18 (0.12)
Common Spoken Language		-0.36 (0.33)	-0.25 (0.38)	0.29 (0.53)	0.18 (0.57)	0.29 (0.48)	0.33 (0.51)
Log Religious Proximity		-0.15*** (0.05)	-0.15*** (0.05)	0.19*** (0.07)	0.12* (0.07)	0.16** (0.07)	0.18*** (0.07)
Log Genetic Distance		-0.06 (0.07)	-0.07 (0.06)	0.09 (0.07)	0.08 (0.07)	0.07 (0.06)	0.10 (0.07)
Common Legal Origin			0.26 (0.17)	0.27* (0.17)	0.22 (0.16)	0.14 (0.15)	0.29* (0.16)
Common Legal System			-0.49* (0.27)	-0.28 (0.20)	-0.27 (0.21)	-0.26 (0.18)	-0.30 (0.20)
Corruption Control Differential			-0.22* (0.13)	-0.16 (0.16)	-0.13 (0.17)	-0.11 (0.15)	-0.14 (0.15)
Instock of FDI in 2001					0.22*** (0.04)		
Trade Value (0-Digit)						0.51*** (0.06)	
Migrant Stock 1960							0.03 (0.03)
Country Controls	-	yes	yes	-	-	-	-
Country FE	-	-	-	yes	yes	yes	yes
Observations	3,487	3,083	3,083	2,894	1,756	2,850	2,894
R-squared	0.109	0.73	0.75	0.89	0.90	0.91	0.90

Note: The table shows the result of seven PPML regressions with out-stock FDI as dependent variable. The data is from the year 2001. Single-country control variables include: host GDP (million us dollars), home GDP (million us dollars), host population, home population, corruption control in the host country, corruption control in the home country, rule of law in the host country and rule of law in the home country. Standard errors are shown in parentheses. Significance at the 10% level is indicated by *, at the 5% level by **, and at the 1% level by ***.

Table 3: Educated Migrants and FDI

Outward FDI - Stock in 2001							
Mean of dep. variable	1'312.836	1'442.241	1'442.241	1'525.814	1'536.567	2'424.559	1'525.814
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log Educated Emigrants 1990	0.611*** (0.064)	0.33*** (0.06)	0.32*** (0.06)	0.17*** (0.05)	0.14*** (0.05)	0.12** (0.05)	0.14** (0.06)
Log Geographic Distance		-0.61*** (0.22)	-0.56*** (0.18)	-0.18* (0.11)	-0.11 (0.11)	-0.09 (0.11)	-0.15 (0.12)
Common Spoken Language		-0.35 (0.35)	-0.22 (0.41)	0.36 (0.53)	0.24 (0.57)	0.35 (0.48)	0.40 (0.51)
Log Religious Proximity		-0.14*** (0.05)	-0.14*** (0.05)	0.20*** (0.07)	0.14** (0.07)	0.16*** (0.06)	0.20*** (0.06)
Log Genetic Distance		-0.09 (0.07)	-0.09 (0.06)	0.09 (0.07)	0.08 (0.06)	0.06 (0.06)	0.09 (0.07)
Common Legal Origin			0.26 (0.17)	0.27 (0.17)	0.21 (0.17)	0.14 (0.15)	0.28* (0.17)
Common Legal System			-0.49* (0.27)	-0.28 (0.20)	-0.27 (0.22)	-0.27 (0.18)	-0.31 (0.20)
Corruption Control Differential			-0.21* (0.13)	-0.15 (0.15)	-0.12 (0.16)	-0.10 (0.14)	-0.13 (0.15)
Instock of FDI in 2001					0.22*** (0.04)		
Trade Value (0-Digit)						0.53*** (0.06)	
Migrant Stock 1960							0.03 (0.03)
Country Controls	-	yes	yes	-	-	-	-
Country FE	-	-	-	yes	yes	yes	yes
Observations	3,487	3,083	3,083	2,894	1,756	2,850	2,894
R-squared	0.241	0.72	0.73	0.89	0.90	0.91	0.90

Note: The table shows the result of seven PPML regressions with out-stock FDI as dependent variable. The data is from the year 2001. Single-country control variables include: host GDP (million us dollars), home GDP (million us dollars), host population, home population, corruption control in the host country, corruption control in the home country, rule of law in the host country and rule of law in the home country. Standard errors are shown in parentheses. Significance at the 10% level is indicated by *, at the 5% level by **, and at the 1% level by ***.

Table 4: Bilateral distance and the effect of migration on FDIs

Outward FDI - Stock in 2001									
Mean of dep. variable	1'312.836 (1)	1'442.241 (2)	1'442.241 (3)	1'525.814 (4)	1'536.567 (5)	2'424.559 (6)	1'525.814 (7)	(8)	(9)
Log Emigrants 1990	0.16*** (0.04)	-0.05 (0.06)	-0.54*** (0.16)	0.18*** (0.04)	0.20*** (0.07)	0.44*** (0.09)	0.18*** (0.04)	0.20*** (0.04)	0.23*** (0.06)
Log Geographic Distance	-0.19* (0.11)	-0.15 (0.11)	-1.15*** (0.23)	-0.24* (0.13)	-0.17 (0.12)	-0.33*** (0.11)	-0.16 (0.12)	-0.20* (0.11)	-0.13 (0.12)
Common Spoken Language	0.20 (0.54)	0.31 (0.46)	0.26 (0.47)	1.15 (0.86)	0.15 (0.54)	0.30 (0.48)	0.30 (0.50)	0.56 (0.45)	0.34 (0.51)
Log Religious Proximity	0.18*** (0.07)	0.18*** (0.06)	0.13** (0.06)	0.17*** (0.07)	0.09 (0.11)	0.14** (0.06)	0.17*** (0.07)	0.16** (0.07)	0.17** (0.07)
Log Genetic Distance	0.10 (0.07)	0.11* (0.06)	0.17** (0.07)	0.11 (0.07)	0.09 (0.06)	-0.34*** (0.09)	0.11* (0.07)	0.12* (0.07)	0.09 (0.06)
Common Legal Origin	0.28* (0.16)	0.30* (0.16)	0.25* (0.15)	0.29* (0.16)	0.27* (0.16)	0.22 (0.15)	0.88*** (0.28)	0.28* (0.16)	0.28* (0.16)
Common Legal System	-0.31 (0.21)	-0.38* (0.21)	-0.31 (0.21)	-0.25 (0.21)	-0.28 (0.21)	-0.32 (0.21)	-0.22 (0.21)	1.15** (0.45)	-0.38* (0.22)
RuleofLaw_differential	-0.37* (0.21)	-0.34* (0.18)	-0.27 (0.18)	-0.38* (0.21)	-0.37* (0.21)	-0.36* (0.19)	-0.35* (0.20)	-0.27 (0.17)	0.34 (0.24)
mig2		0.02*** (0.00)							
Mig*Geodist			0.08*** (0.02)						
Mig*LingProx				-0.10 (0.07)					
Mig*ReliProx					0.01 (0.01)				
Mig*GenDist						0.06*** (0.01)			
Mig*Legal Origin							-0.07*** (0.03)		
Mig*Legal System								-0.15*** (0.05)	
Mig*Rule of Law Differential									-0.09** (0.04)
Observations	2,894	2,894	2,894	2,894	2,894	2,894	2,894	2,894	2,894
R-squared	0.89	0.90	0.91	0.90	0.90	0.90	0.90	0.92	0.90

Note: The table shows the result of nine PPML regressions using FDI outstock as dependent variable. The data is from the year 2001. Single-country control variables include: host GDP (million us dollars), home GDP (million us dollars), host population, home population, corruption control in the host country, corruption control in the home country, rule of law in the host country and rule of law in the home country. Standard errors are shown in parentheses. Significance at the 10% level is indicated by *, at the 5% level by **, and at the 1% level by ***.

Table 5: Institutional Quality and the effect of migration on FDIs

Outward FDI - Stock in 2001									
Mean of dep. variable	1'312.836	1'442.241	1'442.241	1'525.814	1'536.567	2'424.559	1'525.814		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log Emigrants 1990	0.15*** (0.04)	0.09** (0.04)	0.09** (0.04)	0.07* (0.04)	0.09** (0.05)	0.27*** (0.05)	0.19*** (0.06)	0.22*** (0.06)	0.24*** (0.04)
Log Geographic Distance	-0.21* (0.11)	-0.14 (0.11)	-0.16 (0.11)	-0.15 (0.11)	-0.16 (0.12)	-0.25** (0.11)	-0.22* (0.11)	-0.23** (0.12)	-0.24** (0.11)
Common Spoken Language	0.29 (0.53)	0.33 (0.53)	0.36 (0.53)	0.37 (0.52)	0.32 (0.52)	0.53 (0.50)	0.33 (0.54)	0.37 (0.55)	0.48 (0.51)
Log Religious Proximity	0.19*** (0.07)	0.18*** (0.07)	0.18*** (0.07)	0.18*** (0.07)	0.19*** (0.07)	0.18*** (0.07)	0.19*** (0.07)	0.18*** (0.07)	0.17** (0.07)
Log Genetic Distance	0.09 (0.07)	0.10 (0.07)	0.09 (0.07)	0.10 (0.07)	0.10 (0.07)	0.10 (0.08)	0.09 (0.07)	0.10 (0.07)	0.10 (0.07)
Common Legal Origin	0.27* (0.17)	0.28* (0.17)	0.28* (0.17)	0.28* (0.17)	0.28* (0.17)	0.29* (0.17)	0.28 (0.17)	0.28* (0.17)	0.28* (0.17)
Common Legal System	-0.28 (0.20)	-0.33* (0.19)	-0.34* (0.20)	-0.33* (0.20)	-0.31 (0.20)	-0.29 (0.20)	-0.28 (0.20)	-0.28 (0.20)	-0.27 (0.20)
CorruptionControl.differential	-0.16 (0.16)	-0.17 (0.15)	-0.16 (0.15)	-0.16 (0.15)	-0.17 (0.15)	-0.21 (0.14)	-0.18 (0.15)	-0.19 (0.15)	-0.19 (0.14)
Mig*Corruption Control Partner		0.06** (0.02)							
Mig*Rule of Law Partner			0.07** (0.03)						
Mig*Gvmt Effectiveness Partner				0.07** (0.04)					
Mig*Regulatory Quality Partner					0.06 (0.04)				
Mig*Corruption Control Reporter						-0.07*** (0.02)			
Mig*Rule of Law Reporter							-0.03 (0.04)		
Mig*Gvmt Effectiveness Reporter								-0.04 (0.04)	
Mig*Regulatory Quality Reporter									-0.06** (0.03)
Observations	2,894	2,894	2,894	2,894	2,894	2,894	2,894	2,894	2,894
R-squared	0.89	0.90	0.90	0.90	0.90	0.90	0.89	0.89	0.90

Note: The table shows the result of nine PPML regressions using FDI outstock as dependent variable. The data is from the year 2001. Single-country control variables include: host GDP (million us dollars), home GDP (million us dollars), host population, home population, corruption control in the host country, corruption control in the home country, rule of law in the host country and rule of law in the home country. Standard errors are shown in parentheses. Significance at the 10% level is indicated by *, at the 5% level by **, and at the 1% level by ***.

Table 6: Migration and Portfolio Investments

Portfolio Investments - Stock in 2001				
Mean of dep. variable	(1)	(2)	(3)	(4)
Log Migration 1990	0.57*** (0.04)	0.35*** (0.05)	0.33*** (0.05)	0.06*** (0.02)
log Geographic Distance		-0.69*** (0.17)	-0.68*** (0.16)	-0.00 (0.09)
Common Spoken Language		-1.02*** (0.35)	-1.27*** (0.37)	0.32 (0.30)
Common religion		-0.31 (0.41)	-0.43 (0.41)	0.02 (0.25)
Genetic Distance		0.07 (0.09)	0.08 (0.10)	0.06 (0.04)
common legal origin			0.35** (0.16)	0.14 (0.12)
Common legal system			-0.41* (0.25)	0.08 (0.11)
CorruptionControl_differential			0.20 (0.27)	0.25** (0.10)
RuleofLaw_differential			-1.24*** (0.33)	-0.42* (0.21)
Observations	6,082	5,129	5,129	4,784
R-squared	0.11	0.61	0.63	0.94

Note: The table shows the result of nine PPML regressions using FDI outstock as dependent variable. The data is from the year 2001. Single-country control variables include: host GDP (million us dollars), home GDP (million us dollars), host population, home population, corruption control in the host country, corruption control in the home country, rule of law in the host country and rule of law in the home country. Standard errors are shown in parentheses. Significance at the 10% level is indicated by *, at the 5% level by **, and at the 1% level by ***.

Table 7: Robustness tests for the migration-FDI link

	Log (1+ Outward FDI) - Stock in 2001				Average Outward FDI flows 2001-2012			
Mean of dep. variable	2.25 (1)	2.35 (2)	2.35 (3)	2.34 (4)	338.14 (5)	358.64 (6)	358.64 (7)	358.64 (8)
Log Migration 1990	0.43*** (0.03)	0.28*** (0.04)	0.27*** (0.04)	0.09** (0.04)	0.39*** (0.04)	0.25*** (0.03)	0.25*** (0.03)	0.18*** (0.06)
log Geographic Distance		-0.23* (0.14)	-0.24* (0.13)	-0.28** (0.12)		-0.21 (0.20)	-0.23 (0.19)	-0.56*** (0.14)
Common spoken Language		0.22 (0.29)	-0.06 (0.27)	-0.44 (0.28)		0.24 (0.27)	0.20 (0.35)	0.98*** (0.31)
Common religion		-0.00 (0.21)	-0.13 (0.20)	0.04 (0.19)		0.17 (0.27)	0.26 (0.29)	1.49*** (0.43)
Genetic distance		0.05 (0.06)	0.08 (0.06)	-0.07 (0.06)		-0.11*** (0.05)	-0.11** (0.05)	0.18*** (0.05)
Common legal origin			-0.04 (0.12)	0.22** (0.10)			0.11 (0.11)	-0.15 (0.11)
Common legal system			-0.02 (0.13)	0.32 (0.19)			-0.23 (0.16)	0.16 (0.13)
CorruptionControl_differential			-0.27* (0.14)	-0.09 (0.16)			0.33 (0.21)	0.35* (0.20)
RuleofLaw_differential			0.20 (0.17)	0.21 (0.18)			-0.39 (0.24)	-0.35* (0.21)
GvmtEffectiveness_differential			-0.34* (0.19)	-0.40** (0.18)				
Controls	-	Yes	Yes	-	-	Yes	Yes	-
Gravity Variables	-	Yes	Yes	Yes	-	Yes	Yes	Yes
FE	-	-	-	Yes	-	-	-	Yes
Observations	3,497	3,201	3,201	3,203	2,782	2,541	2,541	2,541
R-squared	0.11	0.45	0.46	0.71	0.08	0.51	0.53	0.82

Note: The table shows the result of eight regressions. Columns (1) to (4) use the log of 1 + FDI outstock as dependent variable and are the output of an instrumental variable estimation where the total emigrant stock in 1960 is used as an instrument for the total emigrant stock in 1990. The FDI data is from the year 2001. Columns (5) to (8) use the average FDI outflow during the years 2001-2012 (the entire available sample) as dependent variable and are estimated using PPML. In all columns, single-country control variables include: host GDP (million us dollars), home GDP (million us dollars), host population, home population, corruption control in the host country, corruption control in the home country, rule of law in the host country and rule of law in the home country. Standard errors are shown in parentheses. Significance at the 10% level is indicated by *, at the 5% level by **, and at the 1% level by ***.