Diasporas and Foreign Direct Investments

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Preliminary

Abstract

Combining a unique panel dataset on international migration into 34 OECD countries from 223 origins from 1985 to 2010 with data on Foreign Direct Investments (FDI) we investigate how migrant diasporas attract FDI to their origin countries. Our data enables us to control for cultural similarities between countries, an identification issue which previous studies have left largely unaddressed. We find that migrant diasporas indeed contribute to attracting investment, a 1% increase in the migration stock from country i to country j increases the FDI stock from country j to i with 0.08%-0.25%.

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1 Introduction

We have witnessed increasing migration during the last decades, the foreign population in OECD countries has risen from around 20 million to 85 million from 1980 to 2010. This large increase has led to concerns in both destination and origin countries. Relative to the substantial research on destination country effects[2], research on the effects on origin countries is relatively scarce, the few existing studies usually refer to the brain-drain phenomenon, the impact of remittances on the sending country and the effects of emigration on wages for the non-migrants (Docquier and Rapoport (2009); Hanson, (2008 and 2010); Shen et al. (2010)). In this paper we contribute to this literature on origin-country effects with investigations on whether migrant diasporas abroad may help a country attract FDI.

A small literature (see section 1.1 below) has already explored the link between FDI and migration, but, due to data limitations, on a much lower scale than the present paper. The main identification issue facing this literature is that unobserved variables, in particular cultural similarity, may make both migration from country *i* to contry *j* and FDI from *j* to *i* more attractive. For instance, a large number of Swedes live in Denmark, and Denmark owns a large FDI stock in Sweden. This correlation may be large because Denmark and Sweden are right next to each other and have very similar languages, but it may also be large because Denmark and Sweden have similar cultures, controlling for the latter effect is much harder.

As we will argue, our study is the first to convincingly deal with this identification problem. For identification, we first improve cultural controls by using detailed measures of linguistic and genetic distances. Even that may not be enough to control for cultural similarity, and therefore in separate models we additionally control for country-pair fixed effects, effectively eliminating concerns about unobserved cultural similarities, as these presumably vary very little over time. Combining a unique data set on migration, described below, with OECD data on FDI, we end up with over 17.000 matched observations of migration into OECD countries and outward FDI stocks from OECD countries.

We find that migration indeed has a positive effect on FDI, but that previous studies might have somewhat overestimated the effect. Our most conservative estimate, relying only on variation within country pairs, says that a 1% increase in the number of migrants from origin country *i* living

[2] In particular the analyses of immigration effects on wages and employment of natives belong to the traditional migration research areas, see e.g. Borjas (2003) and Card (2005). Recently, the migration research has looked at other effects of migration, such as effects of ethnic diversity and immigration on productivity, innovation and trade creation (Kerr and Lincoln (2010); Pozzoli et al. (2011a and 2011b); Peri (2012); Peri and Requena (2010)).

in destination country *j* will lead country *j* to increase its FDI in country *i* by 0.08%; previous estimates lie between 0.15% and 0.6%.

1.1 Literature and Theoretical Considerations

The literature exploring the link between FDI and migration so far deals with identification as follows: Javorcik, Özden, Spatareanu and Neagu (2011) opt for an instrumentation method and find that migration into the US increases outward US FDI. As we shall argue in more detail below, the most important of their instruments, historical migration stocks, may be inappropriate in this context, since common culture may drive both present FDI and past migration.

Buch, Kleiniert and Toubal (2006) find that more inward migration into Germany is accompanied by more inward FDI, somewhat circumventing the identification problem by examining differences between German states, Foad (2011) does a similar study on US states. Several studies confirm the correlation between FDI and migration without addressing identification: Ligthart and Singer (2010) on Dutch data, Flisi and Murat (2010) for six European countries, Leblang (2010) and Kugler and Rapoport (2011) for cross-sections resembling subsets of our data. Most convincing in terms of causality is perhaps the firm-level analysis of Foley and Kerr (2011), they find that firms that employing high-skilled labor from foreign countries increase both their FDI and their patenting activity in these countries.

Since our dependent variable is bilateral FDI stocks, our analysis also builds on the literature on determinants of FDI. Like migration, and many other spatial social and economic activities, bilateral FDI stocks are well described by a gravity equation, relating the log of bilateral investment to the logged economic sizes of origin and destination economies and the log distance between them. [3] As Blonigen and Piger (2011) note, however, there is little consensus as to what other explanatory variables to include. Eaton and Tamura (1994) examine the role of regional effects and factor endowments, Wei (2000) studies host country corruption, broadened to more general institutional indices by Bénassy-Quéré, Coupet and Mayer (2007), Mutti and Grubert (2004) look at taxes and wages. Relevant to the results of this paper is Loungani, Mody, Razin and Sadka (2003)'s finding that FDI increases with more bilateral telephone calls, suggesting that information flows matter.

[3] While somewhat following the same regularity, bilateral FDI flows are harder to model. FDI flows are 'lumpy', in the sense that one large acquisition between two countries can completely dominate flows that year, making FDI flows very volatile. Moreover, negative FDI flows are not uncommon, bilateral divestments may occasionally be larger than investments. These are the reasons why this paper, along with the overwhelming part of the FDI literature, focuses on stocks.

The leading theoretical model for why FDI follows a gravity equation is due to Head and Ries (2008). Conceptually, their model is readily extended to allow inward migration to increase outward FDI. In Head and Ries (2008)'s model, a firm has valuations for foreign firms, and based on these, the firm bids for the foreign firms it wants. If the bid is high enough, the firm acquires the foreign firm. Aggregating across firms for each country pair, a gravity equation emerges, since firms' valuations are assumed to depend on the standard gravity variables (decreasing in distance, increasing with common language etc). A natural extension would add uncertainty to this valuation: firms do not know exactly how much foreign firms are worth to them. Resident immigrants may then reduce valuation uncertainty by making firms aware of unexploited synergies or business opportunities abroad, increasing FDI stocks between the two countries.

2 Data

2.1 International Migration Flow and Stock Dataset

The first part of the data encompasses information on immigration flows and stocks of foreigners in 34 destination countries from 223 source countries for the years 1980–2010[4]. The dataset has been collected by writing to selected national statistical offices of 27 OECD countries to request detailed information on immigration flows and foreign population stocks by source country in their respective country. For three OECD countries -Korea, Mexico and Turkey- the data come from the OECD International Migration Database. For four other destinations – Estonia, Latvia, Lithuania and Slovania – the data is collected from Eurostat, see Appendix Table A1 and A2 for an overview of definitions and sources for data on immigration flows and foreign population stock, respectively.

Although our dataset presents substantial progress over similar datasets used in past research such as the data from Docquier-Marfouk, the United Nations, the OECD and the World Bank, there are still some problems related to its nature. First of all, the data set is unbalanced, with some missing information on migration flows and stocks for some countries and some years. For an overview of comprehensiveness of observations of flows and stocks for those 34 destination countries over time, see Appendix Table A3 and Table A4, respectively. We may observe that missing observations become less of a problem for more recent years. In our dataset, as in the other existing datasets, different countries use different definitions of an "immigrant" and draw their

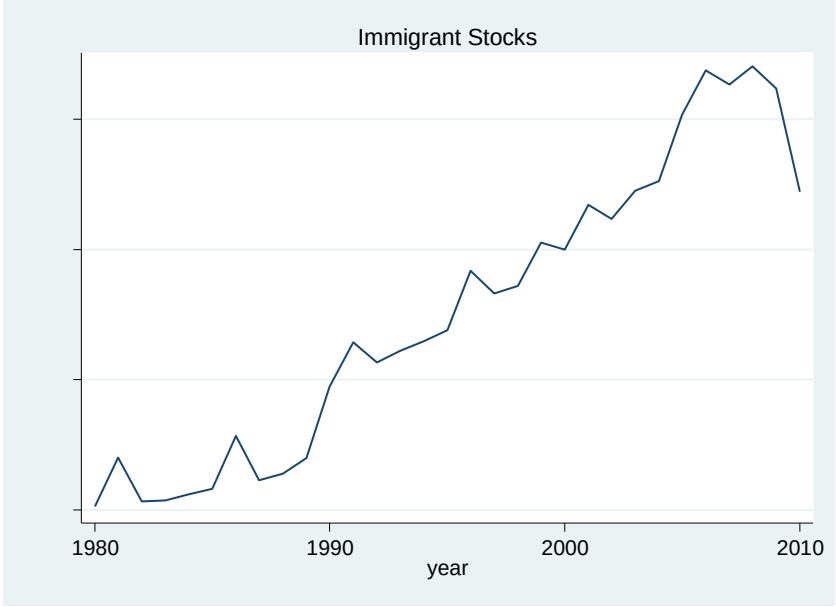
[4] This dataset is thereafter referred as Pytlikova (2011). The original OECD migration dataset by Pedersen, Pytlikova and Smith (2008) covered 22 OECD destination and 129 source countries over the period of years 1989-2000 (see Pedersen, Pytlikova and Smith (2008) for a description of the dataset).

migration statistics from different sources[5]. In particular for foreign population stock, we preferably use the definition based on country of birth, see Appendix Table A2.

2.2 Trends in international migration

This paragraph presents some general trends based on Pytlikova's (2011) dataset. Figure 1 presents the foreign population stocks in receiving countries.

Figure 1: Foreign Population Stocks of Immigrants from origins i living in j countries



Source: own calculations using collected migration flows and stock database by Pytlikova (2011)

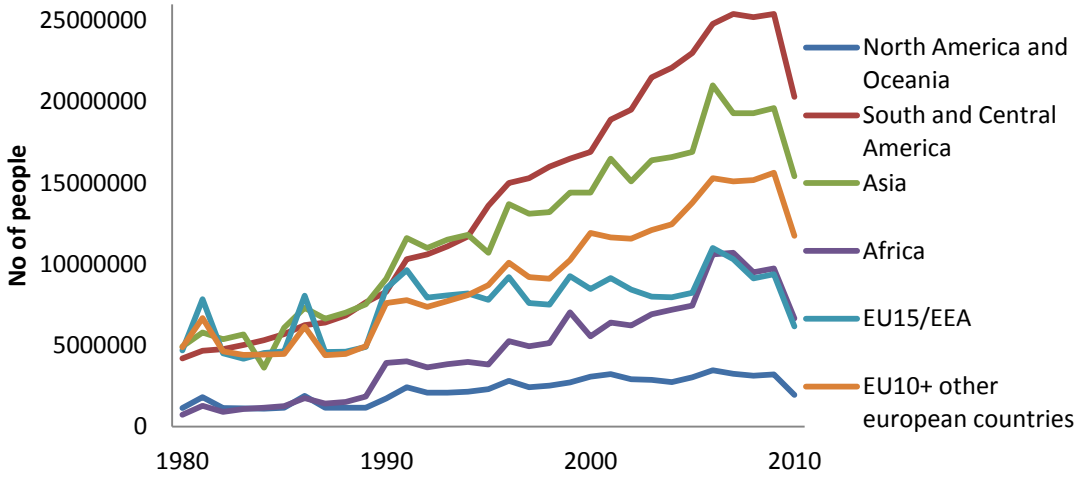
The series is strongly trended: The number of people has increased at an average annual rate of 6.02 percent, changing from around 20 million in 1980 to around 85 million in 2010. Figure 1 reveals,

[5]Thus our data, although in much lesser degree than the datasets by Docquier-Marfouk, OECD, United Nations and the World Bank, bears some problems related to different sources of migration data (censuses, registers or labour force surveys), different definitions of foreigner (country of birth and citizenship) and unbalanced nature of the data due to missing observations for some countries of destinations and origins. For example, Austria, Belgium, Germany, Luxembourg, the Netherlands, Switzerland and the Nordic countries use data based on population registers; the majority of Southern and Eastern European countries use data based on the number of residence permits issued; Australia, Canada, New Zealand and Poland use data from censuses; some countries like Greece, the United Kingdom and the United States use labor force surveys and others have information based on social security systems or other sources. In definitions of immigration flows some countries like Australia, Canada, Ireland, the Netherlands, Poland and the United States define an "immigrant" by country of birth. Other countries like New Zealand, The Slovak Republic, and Spain use definition by country of origin, while the rest of countries define an immigrant by citizenship. For immigration stock, the definition of immigrant population differs among countries as well, but for the majority of destinations we use the definition by country of birth. Australia, Austria, Canada, Denmark, Finland, France, Iceland, Ireland, Mexico, New Zealand, Norway, Poland, the Slovak Republic, Spain, Sweden, Turkey, the United Kingdom and the United States define immigrant stock by country of birth. A few countries like Belgium, Czech Republic, Germany, Greece, Hungary, Italy, Japan, Korea, Luxembourg, the Netherlands, Portugal and Switzerland define immigrant population by citizenship.

however, that the ongoing economic crisis has affected the foreign population stocks significantly. The foreign population stocks across all receiving countries have experienced the most remarkable drop in the whole period, probably reflecting that after becoming unemployed or being unable to find a job, many immigrants have decided to move back to their country of origin. While some of the data development might be driven by the nature of the data and their poorer comprehensiveness during 1980 decade[6] we can be quite confident that from the 1990s, the data are pretty much comprehensive for all destinations.

The next Figure 2 shows the stocks of migrants by region of birth follow closely the world trend, see Figure 4. The figure also uncovers very interesting developments. In particular, one can observe quite significant increase in stocks of foreigners coming from Central and South America, Asia, Central and Eastern Europe and Africa whereas there is almost no increase in stocks of foreigners coming from Oceania and North America, and quite stable development of foreign population stock stemming from old EU15/EEA countries.

Figure 2: Stock of migrants by region of origin, 1980-2010



Source: own calculations using collected migration flows and stock database by Pytlikova (2011)

2.3 Foreign Direct Investment Data

Our data on FDI stocks comes from the OECD database, covering outward FDI stocks (or "positions") from the 29 OECD source countries to 224 host countries, over the period 1985 to

[6] See Appendix Tables A3 and A4 for an overview of the comprehensiveness of the flows and stocks, respectively, for each destination country.

2010. The OECD standard is to report as FDI whenever a firm in country *j* owns at least a 10% share in a firm in country *i*; in practice not all member countries follow this criterion exactly. As for migration data, there are several gaps in the FDI data, especially for new OECD member countries. The database is the standard for research on FDI, details on the data may be found at stats.oecd.org.

2.4 Linguistic and Cultural distance

In our analyses we control for genetic and linguistic distances between countries, going as far as we can in measuring cultural similarities directly. We use the Levenstein linguistic distance produced by the Max Planck Institute for Evolutionary Anthropology, which relies on phonetic dissimilarity of words in two languages. The continuous index increases with the distance between languages. Linguists choose a core set of the 40 more common words across languages describing everyday life and items; then, express them in a phonetic transcription called ASJP code and finally compute the number of steps needed to move from one word expressed in one language to that same word expressed in the other language. For a detailed description of the method, see Bakker et al. (2009).[7]

Regarding cultural distance as a separate measure from the linguistic distance, we include a couple of measures of the genetic distance between populations of both countries in our regressions. These indices, provided to us by Roman Wacziarg, have been already been employed in other contexts to study, for example, cross-country differences in development, Spolaore and Wacziarg (2009). A detailed explanation of how the indices were constructed can be found in these two publications. We only report results for the "genetic distance dominant", which measures for each pair of countries, the distance between the ethnic groups with the largest shares of population in each country. As the genetic index increases the larger are the differences between two populations. It takes a zero if the distributions of alleles in both populations are identical.[8]

2.5 Other Explanatory Variables

Our remaining control variables are: Populations and GDP per capita from the World Development Indicators published by the World Bank, and data on bilateral distance (weighted by population), and variables of past colonial ties, published by CEPII.

[7] The Levenshtein index has already been used as a useful tool to measure the extent of difficulty in learning the local language among migrants to Germany (Isphording and Otten 2011) and for explaining international migration, see Adsera and Pytlikova (2012).

[8] Alternatively we also run regression with the second index ("weighted"), which takes into account within-country subpopulations that are genetically distant and calculates the distance between both countries by taking into account the difference between each pair of genetic groups and weighting them by their shares. The index provides the expected genetic distance between two randomly selected individuals, one from each country.

3 Identification Strategy

With our extremely rich dataset of bilateral migration and FDI, totaling slightly more than 17.000 observations, we have enough time variation to include country-pair fixed effects, more or less eliminating concerns about unobserved cultural similarities, as these presumably are quite time-invariant. Since migration stocks do not vary much over time, the country-pair fixed effects may be too drastic, removing too much of the information in migration stocks. We therefore also try to measure cultural similarity more directly, using the linguistic and genetic distances described above.

Since we are estimating the effect of inward migration on outward foreign direct investment, we do not have the identification concern that factor movements into a country may be caused by a demand shock: FDI goes in the opposite direction of migration. A final concern might be that it is not migration causing FDI, but FDI causing migration: We could imagine that if a German firm acquired an Argentine firm, Argentines would move to Germany, perhaps due to training or firm reorganization. Or perhaps the presence of German firms made Argentineans aware of migration possibilities to Germany. We agree with Ligthard and Singer (2010)'s conclusion that such stories do not seem overwhelmingly important quantitatively, but to deal with them we lag the migration stock one year; presumably current FDI does not increase past job opportunities. Similar considerations make us lag our other time-varying variables as well, GDP per capita and populations for both countries in the pair.

3.1 Econometric Specification

Based on the considerations above, we estimate the following equation:

$$\begin{aligned}\log(FDI_{jit}) = {} & \gamma \log(mig.stock_{ij\,t-1}) + \beta_1 \log(distance_{ij}) + \beta_1 border_{ij} + \beta_3 language_{ij} \\ & + \beta_4 genetic_{ij} + \beta_5 cur.colony_{ij} + \beta_6 past.colony_{ij} + \beta_7 same.country_{ij} \\ & + \beta_8 RTA_{ijt} + \beta_9 EU_{ijt} + \beta_{10} BIT_{ijt} + \beta_{11} \log(gdp.pc)_{it-1} + \beta_{12} \log(gdp.pc)_{jt-1} \\ & + \beta_{13} \log(pop)_{it-1} + \beta_{14} \log(pop)_{jt-1} + c_i + c_j + c_t + \varepsilon_{ijt}. \qquad (1)\end{aligned}$$

The index *j* denotes our 29 OECD parent countries for FDI and destination countries for migrants. The index *i* denotes the 210 host countries for FDI and origin countries for migrants, for which we have matched data. Time is indexed by *t*, from 1985 to 2010.

We include a number of control variables: $distance_{ij}$, the population-weighted longitudinal distance in km.s between the main cities in *i* and *j*, $border_{ij}$ is a dummy for whether countries *i* and *j* share a common border, $language_{ij}$ is one of the linguistics controls and $genetic_{ij}$ is the genetic distance between the populations in *i* and *j*, both described in detail above. $cur.colony_{ij}$ is a dummy

that takes the value one if the one of the two countries is a colony of the other, similarly for past.colony$_{ij}$ if this has been the case in the past. If the two countries used to be part of the same country, (like Denmark and Norway or Austria and Hungary), the dummy variable same.country$_{ij}$ takes the value 1. The set of policy dummies, RTA, EU and BIT indicate, respectively, whether the two countries where in a regional trade agreement together (excluding the EU), both EU members, or had a bilateral investment treaty at time *t*. We include regional trade agreements because Blonigen and Piger (2011) find that they are important determinants of FDI.

When we add country-pair fixed effects, all time-invariant country-pair variables drop out, reducing our estimation equation to

$$\log(FDI_{jit}) = \gamma \log(\text{migstock}_{ijt-1}) + \beta_8 \text{RTA}_{ijt} + \beta_9 \text{EU}_{ijt} + \beta_{10} \text{BIT}_{ijt} + \beta_{11} \text{gdp.pc}_{it-1} + \beta_{12} \text{gdp.pc}_{jt-1} + \beta_{13} \text{pop}_{it-1} + \beta_{14} \text{pop}_{jt-1} + c_{ij} + c_t + \eta_{ijt} \quad (2)$$

identifying the effect of migration (from *i* to *j*) on FDI (from *j* to *i*) from within-pair time variation only.

4 Results

Table 1 presents the results of estimating equations (1) and (2), with more controls being added in rightwards columns. Regarding our variable of interest, the migrant stocks in OECD countries indeed increase these countries' outward FDI, although the effect is not overwhelmingly large: The most optimistic estimate says that a 1% increase in the inward migration stock brings a 0.27% increase in the outward FDI stock. Two thirds of this effect may be due to unobserved common culture: specification (4) finds a 0.08% increase. As argued above, specification (4)'s estimate should be considered a lower bound, as identification relies only on time variation in bilateral migrations stocks.

Over the period 1985-2010, the typical host country in our sample sees total inward FDI over GDP more than double. Against this background, the extra inward FDI that outward migration brings to the typical country are quite modest, even with the large increase in migration shown in figure 1.[9]

[9] Using the coefficients for a back-of-the-envelope calculation, the doubling of inward migration stocks in the OECD from 1990 to 2010 shown figure 1 should have increased outward FDI with 17%-50%. In the same period, the total outward FDI stock in the OECD increased with a factor of 9.5. (The comparison period is chosen because aggregate migration and FDI stocks are more reliable from 1990).

Table 1. The effect of outward migration on inward FDI

Dependant variable: log(outward FDI_{jit}), the stock of FDI that country *j* owns in country *i* at time *t*.

Specification	(1, no FE)	(2, country FE)	(3, country FE)	(4, pair FE)
log(inward migration stock$_{ij\,t-1}$), lagged	0.261 [a]	0.269 [a]	0.241 [a]	0.076 [b]
	(0.009)	(0.012)	(0.011)	(0.037)
log(distance $_{ij}$)	-0.348 [a]	-0.781 [a]	-0.827 [a]	
	(0.023)	(0.030)	(0.027)	
Common border $_{ij}$	0.331 [a]	0.173 [a]	0.211 [a]	
	(0.060)	(0.059)	(0.059)	
Common language dummy $_{ij}$	0.747 [a]	0.389 [a]		
	(0.051)	(0.049)		
Linguistic distance index $_{ij}$			-1.296 [a]	
			(0.073)	
Genetic distance index $_{ij}$			0.972 [a]	
			(0.189)	
Current colony $_{ij}$	3.541 [a]	1.877 [a]	3.012 [a]	
	(0.156)	(0.850)	(0.348)	
Past colony $_{ij}$	0.681 [a]	0.594 [a]	0.547 [a]	
	(0.059)	(0.063)	(0.057)	
Same country $_{ij}$	1.157 [a]	1.339 [a]	1.028 [a]	
	(0.096)	(0.101)	(0.101)	
Regional trade agreement (excl. EU) $_{ijt}$	-0.136 [a]	0.080	0.055	0.058
	(0.047)	(0.050)	(0.051)	(0.074)
EU $_{ijt}$	0.408 [a]	0.324 [a]	0.379 [a]	0.316 [a]
	(0.056)	(0.062)	(0.062)	(0.099)
Bilateral investment treaty $_{ijt}$	0.178 [a]	-0.162 [b]	-0.100 [a]	0.146 [c]
	(0.033)	(0.038)	(0.039)	(0.085)
parent log(GDP per capita $_{j\,t-1}$), lagged	2.455 [a]	1.595 [a]	1.596 [a]	1.090 [a]
	(0.040)	(0.116)	(0.116)	(0.151)
host log(GDP per capita $_{i\,t-1}$), lagged	1.003 [a]	0.737 [a]	0.707 [a]	0.761 [a]
	(0.013)	(0.062)	(0.062)	(0.074)
parent log(population $_{j\,t-1}$), lagged	0.732 [a]	-1.386 [b]	-1.467 [b]	-0.415
	(0.014)	(0.582)	(0.580)	(1.008)
host log(population $_{i\,t-1}$), lagged	0.557 [a]	-1.334 [a]	-1.293 [a]	-1.950 [a]
	(0.011)	(0.242)	(0.243)	(0.449)
Fixed effects	year	year, countries	year, countries	year, country-pair
Observations	18,760	18,760	17,925	18,914
R^2	0.654	0.773	0.781	0.437 (within)

OLS regressions, estimating equations (1) and (2). Robust standard errors in parentheses.
Lags are one-year. [a] significant at 1%. [b] Significant at 5%. [c] Significant at 10%.

Previous studies find effects of the same order of magnitude as above, although results differ somewhat: Country-specific studies like Buch, Kleiniert and Toubal (2005), Javorcik, Özden Spatareanu and Neagu (2011), Flisi and Murat (2010) and Ligthart and Singer (2009) all find substantially larger effects of migration on FDI, ranging from 0.4% to 0.6%. As these studies cannot use country fixed effects, their results are comparable to running our specification (1) for a single country. Kugler and Rapoport (2011) and Leblang (2010) find effects of around 0.16-0.20%, their specification are comparable to our specification (2) on a cross-sectional sample only. It is encouraging that we can confirm that these findings are not all spuriously driven by unobservables, and that although previous studies perhaps overestimate the effect of migration on FDI, the multiple-country studies are not exceedingly far from the lower bound.

Simultaneity between FDI and migration does seem to be important, however. A quite interesting "non-result" in table 1 is that we don't learn much about what the unobserved pair-specific variables driving both FDI and migration might be: Our attempts to measure cultural differences directly with linguistic and genetic distances barely reduces the coefficient of interest.

Although it explains little of the simultaneity between FDI and migration, our linguistic distance measure nevertheless represents a major improvement in explaining the bilateral distribution of FDI stocks. The coefficient is much larger (the genetic and linguistic distances have been scaled to a zero-one interval, so the coefficients are comparable to a dummy) as is the t-stat (not shown).[10] Blonigen and Piger (2011)'s finding that cultural variables (dummies for colonial links a common language in their case) are significant determinants of FDI across specifications seems confirmed.

On the other hand, the effect of genetic distance is rather puzzling: the quite large positive coefficient suggests that the genetically farthest country pairs invest 97% more than the genetically closest. The effect is consistently positive no matter which genetic distance measure we employ and no matter how we split the sample. Adsera and Pytlikova (2012) also find that genetic distance has positive effects on migration, although with a much smaller coefficient. The result merits further scrutiny, but it is not wholly inconceivable that the right kinds of cultural differences may induce FDI rather than hinder it.

Our other control variables generally have the expected signs, with magnitudes comparable to what the FDI literature typically finds. There are a few initially puzzling finding however: the large negative coefficients of FDI-parent and FDI-host populations when including country or country-

[10] The seemingly modest increase in R^2 between specifications (2) and (3) is deceptive, because the country fixed effects inflate the fit: removing distance from specification (2) gives $R^2 = 0.765$.

pair fixed effects. The explanation seems to be that the fixed effects absorb the effects of the levels of populations, and that the negative coefficients pick up population *growth*, which may be correlated with poor institutional quality, causing a negative coefficient. Of the policy variables, only the EU dummy consistently has a positive sign. OECD countries mainly sign bilateral investment treaties with poor countries, once controlling for initial bilateral FDI stocks in specification (4), there is a small positive effect. Other regional trade agreements than the EU seem to have no effect on FDI.

5 Conclusions

This paper has explored the link between migration and FDI on a much larger scale than previous studies, allowing more precise identification. Diasporas in the OECD indeed attract FDI to their origin countries. The effect remains even after carefully removing any spurious correlation caused by cultural similarities, but it is quite small, at least when identified from time-variation only.

The process of isolating the effect of migration on FDI from cultural similarities has the side benefit of revealing how countries that speak similar but non-identical languages do more FDI with each other. Based on these findings, it seems like a fruitful endeavor to model trust, asymmetric information and contract enforcement explicitly in the emerging theoretical explanations for why FDI stocks follow the gravity equation.

References

Adsera and Pytlikova (2012): "The role of language in shaping international migration" *CReAM Discussion Paper.*

Aydemir and Borjas (2006)

Blonigen, B. and J. Piger. "Determinants of Foreign Direct Investments." *NBER Working Paper* No. w16704.

Borjas, G. J. (2003). "The Labor Demand Curve Is Downward Sloping: Reexamining The Impact of Immigration on The Labor Market," *The Quarterly Journal of Economics*, MIT Press, vol. 118(4), 1335-1374.

Bénassy-Quéré, A., M. Coupet. and T. Mayer (2007). Institutional Determinants of Foreign Direct Investment. *World Economy*, vol. 30, No. 5, pp764-782.

Buch, C. M., J. Kleinert and Farid Toubal. "Where enterprises lead, people follow? Links between migration and FDI in Germany." European Economic Review Vol. 50 (2006) pp. 2017–2036

Card, D. (2005). "Is The New Immigration Really So Bad?," *Economic Journal*, v115(506,Oct), F300-F323

Docquier, F., and Rapoport, H. (2009). "Documenting the brain drain of « la crème de la crème »: Three case-studies on international migration at the upper tail of the education distribution." *Journal of Economics and Statitstics, 229*(6), 697-705.

Eaton, J. and A. Tamura (1994). Bilateralism and Regionalism in Japanese and U.S. Trade and Direct Foreign Investment Patterns. *Journal of the Japanese and International Economies* vol. 8, pp478-510.

Flisi and Murat (2010). "The hub continent? Immigrant networks, emigrant diasporas and FDI". *ReCent working papers.*

Foad, H. (2011). "FDI and immigration: a regional analysis." *The Annals of Regional Science, forthcoming.*

Foley, C. and W. Kerr (2011) "Ethnic Innovation and U.S. Multinational Firm Activity," *NBER Working Papers* 17336.

Hanson, H. G. (2008)."The economic consequences of the international migration of labor." *NBER Working Paper no. 14490*

Hanson, H. G. (2010)." International migration and development." In Kanbur, Ravi and Spence, A. Michael (Ed.), *Equity and growth in a globalizing world* (pp. 229-262). Washington, DC: The World Bank.

Head, K. and J. Ries (2008). FDI as an outcome of the market for corporate control: Theory and evidence *Journal of International Economics* Vol.74 pp2-20

Javorcik, B. S., Ç. Özden, M. Spatareanu and C. Neagu (2011) "Migrant networks and foreign direct investment". *Journal of Development Economics Vol. 94* (2011), pp. 231–241

Kugler, M. and H. Rapoport (2011). Migration, FDI, and the Margins of Trade. *CID Working Paper No. 222*

Kerr, W. and W. Lincoln. "The Supply Side of Innovation: H-1B Visa Reforms and US Ethnic Invention." *Journal of Labor Economics, Vol. 28 (2010), pp. 473-508.*

Leblang, D. (2010). "Familiarity Breeds Investment: Diaspora Networks and International Investment". American Political Science Review, Vol. 104, No. 3 (2010), pp 584-600.

Ligthart, J. and D. Singer (2009). "Do Immigrants Promote Outward Foreign Direct Investment? Evidence from the Netherlands." Unpublished, Tilburg University.

Peri, Giovanni and Francisco Requena (2010) "The Trade Creation Effect of Immigrants: evidence from the Remarkable Case of Spain." *Canadian Journal of Economics, Volume 49, 1433-1459.*

Peri, Giovanni (forthcoming) "The Effect of Immigration on Productivity: Evidence from U.S. States" *Forthcoming, the Review of Economics and Statistics*

Loungani, P.,A. Mody, A. Razin, E. Sadka (2003). The Role of Information in Driving FDI: Theory and Evidence. *Scottish Journal of Political Economy* Vol.49, pp.546-543.

Mutti, J., H. Grubert (2004). Empirical Asymmetries in Foreign Direct Investment and Taxation. *Journal of International Economics* 62, 337-358.

Shen, I., Docquier, F., and Rapoport, H. (2010). "Remittances and inequality: A dynamic migration model." *Journal of Economic Inequality, 8(2), 197-220.*

Spolaore, Enrico and Romain Wacziarg. 2009. "The Diffusion of Development." *Quarterly Journal of Economics* 124 (2): 469-530.

Wei, S.-J. (2000). How Taxing is Corruption on International Investors*? The Review of Economics and Statistics*, Vol. 82, No. 1, pp. 1-11

Appendix

Appendix Table A1: Inflows of Foreign Population: Definitions and Sources

Migration flows to:	*Definition of "foreigner" based on*	*Source*
Australia	Country of Birth	Permanent and long term arrivals, Government of Australia, DIMA, Dept. of Immigration and Multicultural Affairs http://www.immi.gov.au/media/statistics/index.htm
Austria	Citizenship	Population register, Statistik Austria (1997 to 2002), Wanderungsstatistik 1996-2001, Vienna
Belgium	Citizenship	Population register. Institut National de Statistique.
Canada	Country of Birth	Issues of permanent residence permit. Statistics Canada – Citizenship and Immigration Statistics. *Flow is defined as a sum of foreign students, foreign workers and permanent residents.* http://www.cic.gc.ca/english/resources/statistics/facts2009/glossary.asp
Czech Rep.	Citizenship	Permanent residence permit and long-term visa, Population register, Czech Statistical Office
Denmark	Citizenship	Population register. Danmarks Statistics
Estonia	Citizenship	Eurostat
Finland	Citizenship	Population register. Finish central statistical office
France	Citizenship	Statistics on long-term migration produced by the 'Institut national d'études démographiques (INED)' on the base on residence permit data (validity at least 1 year) transmitted by the Ministry of Interior.
Germany	Citizenship	Population register. Statistisches Bundesamt
Greece	Citizenship	Labour force survey. National Statistical Service of Greece 2006-2007 Eurostat
Hungary	Citizenship	Residence permits, National Hungary statistical office.
Iceland	Citizenship	Population register. Hagstofa Islands national statistical office.
Ireland	Country of Birth	Labour Force Survey. Central Statistical Office. Very aggregate, only very few individual origins.
Italy	Citizenship	Residence Permits. ISTAT
Japan	Citizenship	Years 1988-2005: Permanent and long-term permits. Register of Foreigners, Ministry of Justice, Office of Immigration. Years 2006-2008: Permanent and long-term permits. OECD Source International Migration data
Korea	Citizenship	OECD Source International Migration data
Latvia	Citizenship	Eurostat
Lithuania	Citizenship	Eurostat
Luxembourg	Citizenship	Population register, Statistical Office Luxembourg
Mexico	Citizenship	OECD Source International Migration data
Netherlands	Country of Birth	Population register, CBS
New Zealand	Last Permanent Residence	Permanent and Long-term ARRIVALS (Annual – Dec) Census, Statistics New Zealand
Norway	1979-1984 Country of Origin 1985-2009 Citizenship	Population register, Statistics Norway
Poland	Country of Origin	Administrative systems (PESEL, POBYT), statistical surveys (LFS, EU-SILC, Population censuses). Central Statistical Office of Poland
Portugal	Citizenship	Residence Permit, Ministry of Interior.
Slovak rep.	Country of Origin	Permanent residence permit and long-term visa, Slovak Statistical Office
Slovenia	Citizenship	Data for 1996-1997 taken from UN migration data. 1998 – 2009 Eurostat.
Spain	Country of Origin	Residence Permit, Ministry of Interior
Sweden	Citizenship	Population register, Statistics Sweden
Switzerland	Citizenship	Register of Foreigners, Federal Foreign Office of Switzerland
Turkey	Citizenship	OECD Source International Migration data
United Kingdom	Citizenship	Residence permits for at least 12 months. IPS - office for national statistics, and EUROSTAT
United States	Country of Birth	US Census Bureau Current Population Survey (CPS); U.S. Department of Homeland Security: *Yearbook of Immigration Statistics.* Persons obtaining Legal Permanent Resident Status by Region and Country of birth www.dhs.gov/ximgtn/statistics/publications/LPR06.shtm)

Appendix Table A2: Stock of Foreign Population: Definitions and Sources

Foreign population stock in:	*Definition of "foreigner" based on*	*Source*
Australia	Country of birth	Census of Population and Housing, Australian Bureau of Statistics
5.1 Austria	Country of birth	Statistics Austria, Population Census 2001 and Population Register 2001 to 2009. For census year 1981 and 1991 definition by citizenship
Belgium	Citizenship	Population register. Institut National de Statistique
Canada	Country of birth	Census of Canada, Statistics Canada. www.statcan.ca/
Czech Rep.	Citizenship	Permanent residence permit and long-term visa, Population register, Czech Statistical Office and Directorate of Alien and Border Police
Denmark	Country of origin	Population register. Danmarks Statistics
Estonia	Country of birth	Eurostat
Finland	Country of birth	Population register. Finish central statistical office
France	Country of birth	Census. Residence permit. Office des migrations internationals.
Germany	Citizenship	Population register. Statistisches Bundesamt
Greece	Citizenship	Labour force survey. National Statistical Service of Greece.
Hungary	Citizenship	National Hungary statistical office
Iceland	Country of birth	Population register. Hagstofa Islands
Ireland	Country of birth	Censuses, Statistical office, Ireland
Italy	Citizenship	Residence Permits. ISTAT
Japan	Citizenship	Years 1980-1999, Register of Foreigners, Ministry of Justice, Office of Immigration. Years 1999-2008 OECD Source Migration stat. Both sources based on permanent and long-term permits.
Korea	Citizenship	1986-1988: Trends in international migration Outlook, OECD 1990-2008: OECD Source International Migration Database
Latvia	Country of birth	Eurostat
Lithuania	Country of birth	Eurostat
Luxembourg	Citizenship	Population register, Statistical office Luxembourg
Mexico	Country of birth	2005: Trends in international migration Outlook, OECD 2000: OECD Source International Migration Database
Netherlands	Citizenship	Population register, CBS
New Zealand	Country of birth	Census, Statistics New Zealand
Norway	Country background	Population register, Statistics Norway Country background is the person's own, their mother's or possibly their father's country of birth. Persons without an immigrant background only have Norway (000) as their country background. In cases where the parents have different countries of birth, the mother's country of birth is chosen.
5.2 Poland	Country of birth	2002 Census, rest permits, Statistics Poland
Portugal	Citizenship	Residence Permit, Ministry of Interior, www.ine.pt
Slovak Republic	Country of Origin	Permanent residence permit and long-term visa, Slovak Statistical Office
Slovenia	Country of birth	Eurostat.
Spain	1985-1995 Citizenship 1996-2009 Country of birth	Residence Permit, Ministry of Interior
Sweden	Country of Birth	Population register, Statistics Sweden
Switzerland	Citizenship	Register of Foreigners, Federal Foreign Office
Turkey	Country of birth	OECD Source International Migration Database
United Kingdom	Country of Birth	LFS, UK statistical office
United States	Country of birth	US Census Bureau: 1990 and 2000 US census, the rest Current Population Survey (CPS) December. Data Ferret. Years 1980-1989, 1991-2004 from extrapolations by Tim Hatton (RESTAT)

Table A3: Country-Year coverage migration flows

Columns: Destination Countries

Rows: Year

Cell: numbers of source countries, for which we have some observations of number of migrants for particular year

Dest	AUS	AUT	BEL	CAN	CHE	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HUN	IRL	ISL	ITA	JPN	KOR	LTU	LUX	LVA	MEX	NLD	NOR	NZL	POL	PRT	SVK	SVN	SE	TUR	USA
Year																																		
2010	208	190		218	198	135	193	203	113		183				144	2	179					141			194	213	212	124	148	212		194		197
2009	205	190		215	194	141	193	203	113	209	183				139	2	178	188	201	58	205	141	209	128	198	202	212	123	150	212	208	192	200	198
2008	204	190		215	194	143	194	203	113	208	183	120			142	2	178	187	198	57	204	146	207	126	195	202	213	205	143	212	207	192	196	196
2007	206	190	93	215	194	147	193	203	113	190	183	124		191	128	2	178	181	197	28	190	142	190	126	197	202	213	205	126	211	190	192	195	197
2006	206	190	96	215	194	142	193	202	108	190	183	120	17	190	133	2	178	182	195	10	190	139	191		193	202	213	205	128	208	190	192	193	193
2005	203	190	85	215	194	142	191	203	66	190	183	107	114		121	2	178	185	10	10	189	137	189		187	202	213	205	124	208	190	192	193	195
2004	203	190	71	215	194	146	191	203	57	190	183	107	109		108	2	178	183	10	10	189	135	189		193	202	213	205	118	208	190	192	193	204
2003	201	189	70	215	195	142	191	203	57		183	127	107		121	2	178	180	10	10	189	127	189		191	202	213	205	114	208	190	192	194	204
2002	198	189	70	215	194	141	191	203	57		183	128	99		110	2	178	182	10	10	188	123	187		198	192	213	205	126	208	188	192	193	204
2001	198	189	70	215	194	115	84	203	57		183	130	104		117	2	178	181	10	10	195	116	195		197	192	213	205	114	208	196	192	194	204
2000	200	189	70	215	180	110	83	203	59		183	129	69		118	2	178	182	15	10	195	124	195		197	192	213	205	113	208	196	192	194	204
1998	193	189	70	215	180	122	193	203	59	188	183	117	73	188	114	2	178	182	14		195	120	188		191	192	213	16	144	208	196	166	171	204
1997	192	189	55	215	179	111	193	203	39		183	118	8	183	114	2	178	179	14			110			194	192	213	14	144	208	24	164	172	204
1996	195	189	55	215	176	114	193	203	58		183	118	9	205	116	2	178	178	14			108			191	191	213	14	144	208	24	167	165	203
1995	187		55	215	176	117	193	203	39		183	118	6	203	117	2	178	48	15			110			187	192	213	13	144			165	165	203
1994	186		55	215	179	106	193	203	39		183	118	4	205	119	2	178	32	14			103			186	192	213	13	144			164		203
1993	180		48	215	178	97	193	203	39		183		5	205	106	2	178	32	14			99			185	192	213	11	143			168		204
1992	182		48	215	174		189	203	45		183		8	205	111	2	178	32	14			105			174	191	213	11	143			157		205
1991	171		48	214	158		172	203	42		183		6	206	104	2	178	32	11			95			160	191	213	11				148		206
1990	168		48	214	156		44	203	42		183		38	200	102	2	178	32	12			100			163	190	213	10				144		205
1989	155		48	214	154		105	203	42		183		31		97	2	178	32	11			93			164	192	213	10				142		205
1988	150		25	214	159		105	203	42		183		38		100	2	178	32	11			94			158	192	213					138		205
1987	159		27	214	155		105	203			183		29		99	2	178	32	7			93			161	192	213					136		205
1986	153		27	214	154		105	203			183		33		103		178	32	7							191	213					138		205
1985	155		27	214	154		105	203			183		35		95		18	32	7							116	213					134		205
1984	154		27	214	151		105	203			183						18									205	213					126		205
1983	166		27	214	152		105	203			183						18									205	213					123		205
1982	161		27	214	154		105	203									18									205	213					121		205
1981			27	214	154		105	203									18									205	213					123		204
1980			27	214			105	203																		205	213					119		202
	AUS	AUT	BEL	CAN	CHE	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HUN	IRL	ISL	ITA	JPN	KOR	LTU	LUX	LVA	MEX	NLD	NOR	NZL	POL	PRT	SVK	SVN	SE	TUR	USA

Table A4: Country-Year coverage migration stocks

Columns: Destination Countries

Rows: Year

Dest	AUS	AUT	BEL	CAN	CHE	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GR	HUN	IRL	ISL	ITA	JPN	KOR	LTU	LUX	LVA	MEX	NLD	NOR	NZL	POL	PRT	SVK	SVN	SE	TUR	USA
Year																																		
2010		209			191	171	192	201			193		179		173	209	175	192				26	208		209	213		209	176	150	209	199		107
2009	209	209	185		194	172	190	201	112		191		171		180	208	175	190	201	27		26	207		207	213		209	177	145	208	199		133
2008	209	209	187		194	171	192	201	112		191	127	177		178		175	192	199	28	205	26	204		209	213			176	144	205	199		133
2007	209	209	178		194	168	193	200	112		191	128	174		174		175	188	198	25	205	26	205		207	213			179	142	204	199		133
2006	199	209	184	210	194	168	193	200	112		193	193	148	189	173	43	175	189	195	25	204	23	203		207	213	211		174	144	205	199		96
2005	209	209	182		194	166	139	201	112		193	204	97	191	165		175	189	183	25	204	23	203	10	208	213			173	139	205	199		96
2004	208	209	181		194	165	139	201	112		193		101	189	162		172	188	18	25	201	23	200		208	213			171	137	200	199		96
2003	208	209	181		194	163	138	201	112		193		100	190	156		172	188	18	25		23	203		207	213			168	149	200	199		96
2002	208	209	181		194	161	138	201	99		193		100		158	177	172	186	42	25		23			207	213		201	168	148	204	199		96
2001	190	207	181	190	194	163	138	201	99		193		97		154		172	187	42	19	201	12			206	213	199		167	142	205	199		96
2000	207	191	176		195	161	138	201	99	136	193		102	207	163		172	184	122	19		137		201	206	213			164	140	205	199	196	132
1999	206		174		195	164	138	201	99		193	162	87		163		172	185	42	19		12			204	213			158	136	205	111		96
1998	206		174		195	158	138	201	99		193		104		161		172	38	42	19		12			204	213			155	144	136	111		96
1997	204		55		195	152	138	201	99		193		100	189	159		172	189	42	19		12			204	212			152	144		111		96
1996	192		55	201	195	153	138	201	63		193		90	205	157	36	65	50	18	19		12			204	212	52		151	139		111		96
1995	202		55		195	150	138	201	58		193		85	205	146		65	50	37	19		12			200	212			151	140		111		96
1994	49		55		195	145	137	201	58		193		87	205			66	50	18	19		12			9	212			147			107		126
1993	49		48		195		137	201	58		193		87	205			66	50	18	19		12			9	212			140			104		126
1992	49		48		194		132	201	58		193		82	205			66	185	18	17		12			9	212			130			101		126
1991	168		48	180	194		117	201	58		193		70	205		2	43	184	16	15		12			9	212	51		126			98		126
1990	49	70	48		194		118	201	57		193	76		205			60		42	15		82			9	212			121			100	12	127
1989			48		194		118	201	57		134			204			60		12			8			9	212			122			98		125
1988					194		118	201	57		134			204			60		12	3		8			9	212			120			98		125
1987					194		118	201	57		131			204			60		12	4		8			9	212			118			97		125
1986	75			42	194		118	201	57		125			204		2	60		12	9		8			9	212	75		115			94		125
1985					194		118	201	57		124			204			60		42						9	212			109			95		125
1984					194		118	201			191			204			60		12						9	187			103			89		125
1983					194		118	201						204			60		12						9	187			100					125
1982					194		118	201						204			60		12							193			83			85		125
1981	81		47	42	194		118	201						204		2	59		12							189	75		98					125
1980		64			194		116	201						204					42			79				190			90			95		128
	AUS	AUT	BEL	CAN	CHE	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GR	HUN	IRL	ISL	ITA	JPN	KOR	LTU	LUX	LVA	MEX	NLD	NO	NZL	POL	PRT	SVK	SVN	SE	TUR	USA