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# Foreign aid and asylum immigration. Does development matter?

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**Abstract**. This paper tests the influence of aid from rich to developing economies on bilateral asylum inflows. Results show that aid effects on asylum applications are significant, but vary with the level of development of the recipient country. Aid to poor economies – especially in Sub-Saharan Africa – deters asylum inflows, while aid to medium-income developing countries attracts asylum seekers. Aid leads to negative spillovers on applications across donors. At the same time, foreign aid has no incidence on voluntary immigration. Overall, the deterring effects of aid on inflows from poor countries are stronger when transfers are coordinated across donors and are made conditional on economic and institutional improvements in the recipient economy.

JEL Classification: F35, F22, J15

Keywords: foreign aid, asylum seekers and refugees, development.

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1. Introduction.

During the last decade, asylum applications in OECD countries increased more than fivefold– from 316,330 in 2006 to 1,661,500 in 2015 –, and are expected to rise in the future. This has generated an intense debate in rich countries about the norms on asylum permits and refugees integration, but also on the feasibility of influencing the inflows at their source, possibly through measures of economic policy. This, however, appears to be an elusive task. In the first place, because in fact there is just one suitable policy instrument: foreign aid. In the second place, because views about the effects of aid on asylum inflows differ strongly. One opinion is that aid helps countries to overcome the political and economic crises at the root of the flows of refugees, and hence deters them, another is that aid allows resource-constrained people in the recipient country to afford the costs of migration, and hence increases asylum applications.

Opinions about aid and migration also differ among scholars. In particular, the economic literature on international migration includes some studies about the effects of aid on migration and a few on aid and asylum applicants, but findings are heterogeneous. One example is the collection of articles edited by Böhning et al. (1994), which share the common goal of uncovering the influence of aid on general migration, but reach differing and contrasting results (Martin, 1994). Regarding forced migration, in Thielemann (2004) aid has a positive influence on asylum inflows in 20 OECD countries during 1985-1999, while in Neumayer (2005) aid has no effect on applications in Western Europe during 1982-1999.

This paper measures the impact of bilateral aid on asylum seeker applications from 113 sending countries in 14 OECD destination economies for each year over the period 1993-2013. In principle, by improving living and economic conditions in the recipient country, aid can both prevent and encourage refugee migration. My central hypothesis is that either effect depends on the level of development of the recipient country. Therefore, I test whether aid effects on asylum inflows vary with the level of average income of the origin economies. As a side effect, aid could also influence voluntary migration. Hence, I also measure this secondary potential effect. This paper adds to the

existent literature in three main ways: it focuses explicitly on foreign aid as a policy tool designed to influence forced migration; it tests its possible relation with the level of development of the recipient country; and it measures its overall influence, on forced and voluntary inflows.

International norms and agreements outline the difference between refugee and voluntary migration. A refugee is a person who 'owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality, and is unable to, or owing to such fear, is unwilling to avail himself of the protection of that country' (Refugee Convention, 1951). On the other hand, a migrant is a person who leaves the country for any other reason. While there is a grey area between the two types of migration, their different traits prevail. The refugee flees the home country to escape an extremely critical situation but she would rather not leave. She does not choose the destination, nor does the destination choose her, as it would happen in a totally voluntary setting. On the other hand, a migrant chooses where to move given a clearly defined set of alternatives and opportunities, including the destination country's policies on immigration (Dustmann et al. 2016).

Forced migration is as old as human history, while international aid is officially recognised as a transfer of resources from one country to another only since the end of the second world war. The majority of foreign aid takes the form of donations, while a minor proportion consists of grants. Its goals are clearly stated by OECD: 'Official Development Aid (ODA) is administered with the promotion of the economic development and welfare of developing countries as its main objective'. Despite the professed aim, several studies find that a substantial part of the aid provided by rich economies is unrelated to the real needs of recipient countries. (Boone 1996; Alesina and Dollar 2000; Collier and Dollar 2002; Lancaster 2007; Fuchs et al. 2014; Jones 2015). However, among these real needs there can be some determinants of forced migration. Hence, if, as hypothesised above, refugee migration and development are related, then the transfers of aid fulfilling the goals of economic development and welfare can indirectly affect refugee and asylum seeker movements.

This study's main findings are that the effects of bilateral aid on asylum inflows depend on the average income of the origin country. Specifically: aid to poor countries reduces asylum inflows, while transfers to medium-income developing economies can increase applications. The deterring effect concerns especially inflows from Sub-Saharan Africa. In addition, aid generates negative cross-donor spillovers: more aid from other countries decreases the number of asylum inflows in the OECD destination. A further result is that foreign aid has no effect on voluntary immigration. Hence, bilateral aid influences the inflows of asylum seekers without, as a side effect, affecting those of immigrants. Indirect effects are also discussed. I use a dynamic panel empirical model with a rich array of fixed effects and different specifications to control for the robustness and sensitivity of results. To specifically control for potential endogeneity, I use System GMM in levels and differences. The rest of the paper is organised as follows. Section 2 reviews and resumes the related literature, Section 3 presents data sources and descriptive statistics, Section 4 describes the estimation strategy, Section 5 presents and discusses results, and Section 6 concludes.

## 2. Related literature.

The empirical literature finds the determinants of forced and voluntary migration to be mostly similar, with economic factors being more important for voluntary migration, and political factors for forced migration (Neumayer 2005). Regarding voluntary migration, it appears to depend especially on average income and income growth in origin and destination countries. Specifically, the difference between average income of destination and origin economies affects migration in Hatton and Williamson (2005), Mayda (2010), Grogger and Hanson (2011), Ortega and Peri (2013), and several others. A positive effect of income at destination is in Hartog and Vriend (1989), Katseli and Glystos (1989), Lundborg (1991), and Bauer and Zimmermann (1998). These results suggest that emigration decreases with development in the origin economy (per capita income negatively affects emigration in Ortega and Peri 2013). However, other studies find that an increase of per capita income in the origin country initially boosts emigration, and discourages it only beyond a certain stage of

development. The hypothesis of a bell-shaped function of emigration in average income is present in Martin and Taylor (1996), de Haas (2007) and other authors. Using cross-country data, Clemens (2014) provides evidence on this inverted 'U' relationship. He states that it could hold also in the long-run, but that length of time is longer than that of most panel databases. Other potential determinants of migration tested in empirical studies concern other economic factors – such as unemployment – and political and institutional characteristics of countries (among others, Hatton and Williamson 2005; Docquier et al. 2014).

A potential determinant of peoples' international movements is foreign aid. Faini and Venturini (1993) hypothesise that aid, as development, initially fosters emigration from poor countries, where would-be migrants face resource constraints, and exerts the opposite effect beyond a certain level of average income, in a reverse U-shaped relationship. The book *Aid in Place of Migration?*, edited by Böhning et al. (1994), contains several studies on the link aid-migration, but not a homogenous result (Martin, 1994). Schiff (1994), Vogler et al. (1997), and Vogler and Rotte (2000) also hypothesise a bell-shaped relationship between aid, development and migration. Berthélemy et al. (2009), using cross-country data from a wide set of countries, find that bilateral aid encourages migration from the poorer economies and reduces it from less poor ones. Belloc (2015), also using a cross-section of countries, finds a positive relationship, in this case linear, between foreign aid and total emigration from South Saharan countries. In Nyberg Sørensen et al. (2003), aid to poor countries has no unique effects on migration to rich economies. The authors test also the impact of aid transfers to neighbouring economies of countries in political crisis. In a press article, (Clemens and Sandefur 2015) state that the aid-development-migration nexus is positive: more aid to poor countries boosts immigrant flows to rich economies.

Regarding refugee and asylum migration to rich countries, some studies find that it diminishes with higher levels and growth of per capita GDP in the home country (Neumayer 2005; Hatton 2009). More generally, forced migration significantly depends on protest and oppression, conflict and genocide in the origin country (Marfleet 2006; Schmeidl 1997; Davenport et al. 2003; Moore and

Shellman 2007; and Hatton 2009). As seen above, among few others, Thielemann (2004) and Neumayer (2005) include foreign aid among the potential determinants of refugee and asylum flows, but reach different results.

Other potential determinants of bilateral migration are migrant networks; they can decrease the costs of international movements and facilitate further inflows from the home country. In Neumayer (2004), the stocks of asylum seekers have a pull effect on new asylum applicants. Hatton (2016) finds a positive influence of immigrant stocks on asylum applications. In Davenport et al. (2003), past refugee migration positively influences refugee stocks. However, to my knowledge, no study tests the effects of all these three groups – former asylum seekers, refugees and immigrants – on asylum applicants. The implicit assumption is that the three blend in unique composite aggregate, defined only by the country of origin. In the real world, however, the three groups can remain quite distinct and exert independent effects. For example, voluntary migrants, refugees and asylum seekers may reach the host country in different periods, belong with different social classes or ethnic groups in the home country, or hold different political, religious or cultural orientations. This can make their allegiance to the origin country weaker than their fidelity to their own group, ethnicity or political orientation. For example, immigrants can regard asylum seekers as less akin than other immigrants, and vice versa. Therefore, network effects can differ between groups.[1]

## 3. Data and descriptive statistics

The United Nations High Commissioner for Refugees (UNHCR) provides standardised cross-country data on refugees and asylum seekers since 1950, and the OECD statistics division is the main source of standardised data on Official Development Aid (ODA) since 1969. I built a panel database by using data from UNHCR extracted from OECD Statistics on the asylum applications submitted

[1] This can apply especially, but not only, to countries of origin with strong internal divisions determined by religion or ethnicity. Political divisions may also matter. Some evidence suggests that refugees from Latin America who flew their countries during the dictatorships of the seventies of last century scarcely interact with economic migrants from their home countries who arrived later.

by people from 113 developing countries in 14 destination economies – Australia, Austria, Belgium, Canada, Denmark, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, United Kingdom and United States –each year during 1993-2013. The first year with data from former ex-communist countries in Eastern Europe is 1993. Asylum seekers are individuals who have sought international protection, and whose claims for refugee status have not yet been determined (UNHCR). Asylum applications from the list of 113 origin countries account for almost 80 percent of all asylum application in the selected OECD destinations (and 70 percent of asylum applications in all Western OECD countries), during the period considered. Data on foreign aid, regarding the ODS (net disbursements) from each donor (destination country for asylum seekers) economy to each recipient (origin country of asylum applicants) are extracted from OECD Statistics. A complete list of variables and sources, and the list of countries, is in Table A1.

Figure 1 shows that the level of asylum applications is high at the beginning of the period considered, partly as a consequence of the fall of the Berlin wall in 1989, but decreases rapidly afterwards, with the consolidation of the new world order. Many refugees from the former republics of the Soviet Union return home, and asylum inflows into the selected OECD destinations decrease. Another important wave of asylum seeker inflows – still underway and expected to last for the next few years – started with the terrorist attacks of 9/11/2001 and the subsequent military conflicts in Afghanistan and Iraq. Substantial increases of asylum applications followed also the Balkans' ethnic conflicts, the 'Arab spring' in Middle Eastern and North African countries, and political turmoil in countries of Sub Saharan Africa and central Asia. During the same time-span, bilateral aid initially falls, grows from 2000 until 2006, and decreases again afterwards. These modifications partly coincide with changes of the main origin and recipient countries. Table A2 lists the twenty top origin countries of asylum applications and bilateral aid recipients during 1993-2000 and 2001-2013. In the second period, there are fewer asylum applications from Eastern Europe and more from the Middle East and Sub-Saharan Africa.

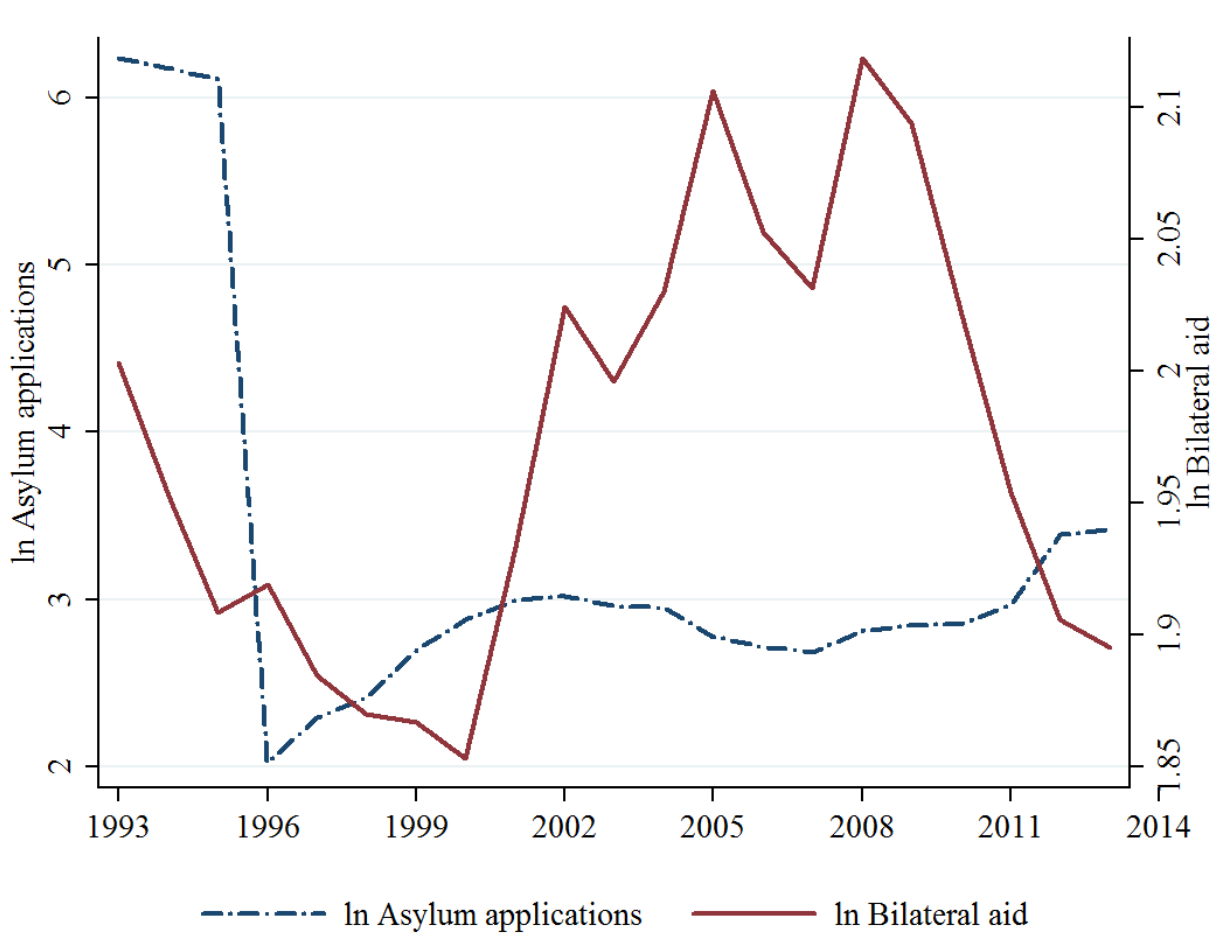


Figure 1 - Bilateral aid and asylum seeker inflows

4. Estimation strategy

In order to study the correlations between foreign aid and asylum applications, I use dynamic panel regressions. The dependent variable is the number of asylum applications each year in the destination country. The base regression is:

$$lnY_{odt} = \lambda lnY_{odt-1} + \beta T_{odt} + \gamma O_{ot} + \delta D_{dt} + \varepsilon_{odt}, \quad (1)$$

where $lnY_{odt}$ is the (log of the) number of asylum applications of individuals from country *o* in country *d* during year *t*; $lnY_{odt-1}$ is its value lagged one year; it should capture the influence of former asylum seekers on new inflows. $T_{odt}$ includes other dyadic variables. Among them is the variable of interest, aid provided by the OECD country *d* to developing country *o*. Aid should have positive or negative

effects depending on whether it provides incentives to remain or to flee the country and, in the second case, on how it influences individuals' preferences across possible destinations.[2] The stocks of *Bilateral refugees* and *Bilateral immigrant inflows* should exert distinct pull effects on asylum applicants. As expected, the correlation between the variables regarding asylum seekers, refugees and migrants is not high: Table A3 shows that correlation coefficients are below or around 0.3. Distance between origin and destination should capture the effective cost of international migration and of cultural dissimilarities between countries. Bilateral trade agreements between origin and destination can lower the costs of bilateral migration because of the knowledge they provide on partner countries.

$O_{ot}$ concerns factors regarding origin countries. As with bilateral aid, transfers from all other countries (all countries other than *d*) can provide incentives to remain or reasons to leave. It, however, includes an 'attraction for the donor' component that 'deviates' asylum seekers from *d*. Per capita GDP, the main proxy for the country's level of development, can also deter or facilitate asylum seeker flows: it provides more resources to flee, but also less reasons to do so. Population accounts for the size of the country. The degree of political terror and lack of civil liberties should both be important potential push factors (Hatton 2004; Neumayer 2004). Natural disasters (proxied by the number of deaths), can boost outflows (Naudé 2010; Neumayer 2005). The number of refugees from the origin country to all destinations except *d* should be positively correlated to applications in *d*. Moore and Shellman (2007) and Hatton and Williamson (2005) find that some countries are more prone to 'produce' refugees than others.

$D_{dt}$ concerns characteristics of the destination country. Per capita GDP at destination is a proxy for expected earnings, and potentially a pull factor (Neumayer 2004). Population indicates the extension of the labour market. The unemployment rate signals the difficulty of finding a job and has an expected negative effect. Policies at destination concerning asylum seekers should also

[2] More aid from a country can intensify the attractiveness of the donor among possible destinations. The presence of a donor in the recipient country, or projects funded by the donor, creates opportunities for contacts between the local population and the donor. More generally, it provides knowledge on the donor's social norms, institutions and culture, which can decrease the costs of migration.

significantly influence the number of applications, but no standardised indicators on these policies are available. Hence, I use two proxies: the first is the rate of rejection of asylum demands from origin *o* in country *d* at year *t*. It is a weak proxy, since it includes pull and push elements. The second, more efficient, is an index built by Hatton and Moloney (2015) based on yearly changes in the tightness of refugee policies in the selected countries.

The impact of aid on asylum applications can depend on how individuals react to the improved environment and the extra available resources. To test whether the level of development condition this response, subsequent specifications include the interaction between bilateral aid and per capita income in the origin country:

$$lnY_{odt} = \lambda lnY_{odt-1} + \beta T_{odt} + \phi(ln\ Bilateral\ aid_{odt-1})*(ln\ pc\ GDP\ orig._t) + \gamma O_{ot} + \delta D_{dt} + \alpha_d + \alpha_o + \alpha_{do} + \alpha_{ot} + \alpha_{dt} + \varepsilon_{odt} \quad (2)$$

These more complete specifications will also include origin-by-year, destination-origin and destination fixed effects. The former should capture all time-varying terms that are constant across destinations *d* and only vary by year and country of origin. Destination-origin dummies absorb all time-invariant bilateral variables that affect asylum applications. Destination fixed effects will account for factors of the destination country that are invariant or change very slowly along time, such as culture or institutions. In further regressions, destination-by-year will replace origin-by-year fixed effects. Finally, a still more complete specification will include both destination-time and origin-time fixed effects together with destination-origin and time dummies. This is a very demanding specification, as it absorbs all bilateral-specific factors as well as origin and destination time-varying factors. Measurement will therefore be entirely concentrated on within country-pair time variations.

Table 1 - Dependent variable: bilateral asylum applications. Basic specifications

| | (1) OLS | (2) OLS | (3) OLS-FE | (4) OLS-FE | (5) OLS-FE | (6) MLR | (7) Model 7 |
|---|---|---|---|---|---|---|---|
| Asylum applications $_{t-1}$ | 0.824*** | 0.824*** | 0.563*** | 0.516*** | 0.538*** | 0.476*** | 0.803*** |
| | (0.007) | (0.007) | (0.011) | (0.008) | (0.011) | (0.008) | (0.014) |
| Bilateral aid $_{t-1}$ | -0.016*** | -0.035 | -0.158*** | -0.101* | -0.152*** | -0.090 | -0.202** |
| | (0.005) | (0.027) | (0.054) | (0.060) | (0.052) | (0.057) | (0.094) |
| (Bilateral aid $_{t-1}$)*(pcGDP orig.) | | 0.003 | 0.024*** | 0.018** | 0.022*** | 0.014* | 0.029** |
| | | (0.004) | (0.008) | (0.008) | (0.007) | (0.008) | (0.013) |
| Bilateral refugees $_{t-1}$ | 0.065*** | 0.065*** | 0.006 | 0.012 | 0.010 | 0.011 | 0.054*** |
| | (0.005) | (0.005) | (0.010) | (0.010) | (0.010) | (0.010) | (0.012) |
| Bilateral immigrant flows $_{t-1}$ | 0.051*** | 0.051*** | 0.062*** | 0.059*** | 0.051*** | 0.040*** | 0.099*** |
| | (0.006) | (0.006) | (0.012) | (0.012) | (0.012) | (0.012) | (0.024) |
| Distance | -0.166*** | -0.165*** | | | | | -0.164*** |
| | (0.014) | (0.014) | | | | | (0.024) |
| pcGDP dest. | 0.134*** | 0.136*** | -0.487* | -0.603** | | | 0.166*** |
| | (0.036) | (0.037) | (0.279) | (0.250) | | | (0.055) |
| Population dest. | 0.021** | 0.021** | -3.263*** | -3.439*** | | | -0.009 |
| | (0.008) | (0.008) | (0.430) | (0.366) | | | (0.022) |
| pcGDP orig. | -0.062*** | -0.068*** | -0.585*** | | -0.612*** | | -0.143*** |
| | (0.007) | (0.010) | (0.070) | | (0.067) | | (0.031) |
| Population orig. | 0.025*** | 0.025*** | 0.333** | | 0.292* | | -0.0001 |
| | (0.006) | (0.006) | (0.163) | | (0.154) | | (0.017) |
| Total effect of pcGDP orig. | -0.062*** | -0.062*** | -0.537*** | | -0.568*** | | -0.086*** |
| | (0.007) | (0.007) | (0.067) | | (0.064) | | (0.014) |
| time trend | yes | yes | yes | yes | yes | yes | yes |
| time dummies | yes | yes | yes | yes | yes | yes | yes |
| Country-pair effect | no | no | yes | yes | yes | yes | yes |
| Origin effects | no | no | yes | yes | yes | yes | yes |
| Destination effects | no | no | yes | yes | yes | yes | yes |
| Origin*time | no | no | no | yes | no | yes | yes |
| Destination*time | no | no | no | no | yes | yes | yes |
| AR(2) | | | | | | | 0.002 |
| AR(3) | | | | | | | 0.102 |
| Hansen J test (P-value) | | | | | | | 0.084 |
| Hansen diff. J test (P-value) | | | | | | | 0.52 |
| Number of instruments | | | | | | | 1,010 |
| Number of country-pair | 1,185 | 1,184 | 1,185 | 1,088 | 1,172 | 1,172 | 1,183 |
| Observations | 14,099 | 14,099 | 14,099 | 14,099 | 14,099 | 14,099 | 14,076 |
| R-squared | 0.871 | 0.871 | 0.897 | 0.918 | 0.910 | 0.931 | |

*Notes*: Robust standard errors clustered by country-pairs in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Corrected standard covariance matrix, robust to panel-specific autocorrelation and heteroskedasticity. Constant not reported. The sample is a panel comprising data from 1993 to 2013. All variables are in logs. Column (7): Sys-GMM, in levels and differences: LDV, *Bilateral aid, refugees* and *immigrants* are treated as potentially endogenous, all other control variables are treated as predetermined; instrumented for using their own lags in level and differences. AR (2) and AR (3) are second-step and third-step Arellano-Bond test for serial correlation. AR(1), not reported, = 0. Total effect of *pcGDP orig.* is calculated by summing the coefficients on *pcGDP orig.* and on (*Bilateral aid t-1)*(pcGDP orig*.), evaluated at the average level of *Bilateral aid*.

Endogeneity and reverse causation can be an issue if aid and asylum seekers influence each other. Using a panel dataset on 18 donor and 148 recipient countries during the period 1992-2003, Czaika and Mayer (2011) find that asylum seekers and refugees in the destination economy positively affect bilateral aid. To account

for potential endogeneity, I use System GMM specifications in levels and differences based on Blundell and Bond (1998) and Roodman (2009a).

## 5. Results

### 5.1. Base specifications

The base results of the estimation of equations (1)-(2) are in Table 1. The dependent variable is the log of the annual applications for asylum – plus one – for each country pair. Adding one allows me to keep the information from the zero-flow observations[3]. The variables *Bilateral aid*, *Bilateral refugees* and *Bilateral immigrants* are lagged one period to allow their effects to influence asylum seekers. The variable of interest, *Bilateral aid*, should affect asylum movements from the origin (recipient), *o*, to destination (donor), *d*, country, but its coefficient is not signed a priori; I hypothesise that it is correlated with the average income of the origin country. All regressions include a time trend and year fixed effects. In the OLS-FE specifications country effects (column 2) and country and country*time fixed effects (columns 3-6) are controlled for. Column 7 depicts the results of the Sys-GMM specification, which controls for endogeneity.

The pooled OLS estimates provide a first idea of how the data are correlated without controlling for country fixed effects, and therefore overestimate the coefficient on the lagged dependent variable. Across regressions, this coefficient spans from 0.82 in the OLS specification of column 1 to 0.52 in the OLS-FE specification of column 4. It is always significant at the 1 percent level, evidencing that past asylum seekers have a robust influence on new applications. As expected, the value of the

coefficient in the Sys-GMM specification lies between the values of the OLS and OLS-FE coefficients (Roodman 2009a).

Our variable of interest, *Bilateral aid*, has a negative and significant effect on asylum applications in column 1. Hence, more aid appears to deter bilateral asylum inflows. The possibility that this aggregate effect is non-linear, and correlated with per-capita income, is first tested in column 2. There, coefficients on *Bilateral aid* and on the interacted variable (*Bilateral aid)*(pc GDP orig.)* are not significant, but suggest that the effect

[3] Part of foreign aid is concessional in character and conveys a grant element (OECD). As an effect of interest repayment, some figures are negative. However, they are a very small proportion of total observations and have been substituted by zeros.

of aid on asylum applications is negative for low levels of income, nil for intermediate ones and positive for medium-income developing countries. Subsequent regressions confirm this U-shaped relationship; coefficients are significant in columns 3-7, signs are in all cases negative on *Bilateral aid* and positive on the interacted variable.

Column 4 includes origin-time, destination, country-pair and time fixed effects, which excludes all time-varying variables concerning origin countries because of collinearity. This specification takes into account the potential heterogeneity between leavers and non-leavers in origin countries (Ortega and Peri 2013). In column 5, destination-time fixed effects control for time-varying factors not captured by the variables included in the regression, such as, for example, asylum and refugee policies in destination countries. Column 6 reports the results of the more exacting specification, where all possible fixed effects are included – time, destination-origin, destination-time and origin-time (origin and destination fixed effects are 'absorbed' by the destination-origin effects) –, results concern only within country-pair variations. As in previous regressions, the relationship between aid and asylum seekers is non-linear: aid transfers to the poorer countries determine a reduction in asylum applications, but the coefficient becomes positive at higher levels of development. To account for the possibility of endogeneity of *Bilateral aid*, I use the System-GMM estimator in levels and differences (column 7). More specifically, *Bilateral aid*, *Bilateral refugees*, *Bilateral immigrants* and the lagged dependent variable are specified as potentially endogenous regressors. Results confirm the U-shaped relationship: coefficients on aid and on the interacted variable are respectively negative and positive, and significant at the 1 percent level. More specifically the turning point takes place at an average income of about 3000$ at constant 2011 international US$. The reported values of tests on serial correlation and over-identification restrictions confirm the validity of results.[4]

These findings show that aid to poor countries provide individuals with incentives and resources to stay, while the same transfers to medium-income economies have the opposite effect. More generally, this suggests that aid has a stronger impact in improving living conditions in poor countries and in attracting asylum seekers from medium-income economies than in allowing resource-constrained individuals to move to the rich donor

[4] The size of the panel is N= 1582 (country-pairs), T = 21 (years). Although the number of number of instruments in columns (7) can appear to be high, it is lower than N (Roodman, 2009b).

economy. If the latter influence were the strongest, then inflows from poor countries – were individuals are more resource-constrained – would be positive and greater than inflows from medium-income economies. Rather than the U-shaped pattern evidenced by this paper's results, a bell-shaped relationship in income between aid and asylum applications would apply (as hypothesised, among others, by Clemens and Sandefur 2015). More generally, this study's results are consistent with the definition of asylum seekers and refugees as individuals who are forced to leave their country, but would rather not move (Dustmann et al. 2016). Especially in poor countries, foreign aid can represent the critical support that allows people to remain, or to move temporarily to a nearby country. Aid to refugee camps is one example. At the other extreme, aid to medium-income developing countries may have a less crucial impact on living conditions but, by increasing the knowledge on the donor economy, can attract asylum seekers. This transmission of knowledge is likely to be more effective as asylum applicants originate from less poor economies, are endowed with higher levels of human capital, and face lower costs of integration at destination.

More specifically, what are the effects of bilateral aid at different levels of development of the country of origin? Consequently, what are the magnitudes of transfers needed to influence the inflows from different origin countries? To compute the total effect of bilateral aid at different level of per capita income, I use the coefficients of the preferred specification, of column 7. In it, an increase of 10 percent in bilateral aid to poor countries, such as Burundi, Eritrea, Liberia, Malawi, the Democratic Republic of Congo, Central African Republic or Afghanistan, reduces the number of applications by about 0.06 percent, with significance at the 5 percent level. The same increase in bilateral aid to medium income developing economies, such as Turkey, Libya, Chile, Saudi Arabia, Kuwait or United Arab Emirates, rises the number of inflows by about 0.05 percent. In countries with intermediate levels of average income, bilateral aid has no effect. It follows that an increase of 10 percent of bilateral aid to, for example, Eritrea, corresponding to extra $914,200 (average bilateral aid to the country is $9.142 million, after the increase is $10.06 million) leads to 23 fewer applications (the average number of applications from Eritrea is 376.4, multiplied by the above coefficient of – 0.06, gives – 23). Hence, the 'cost', in terms of aid transfers, of reducing applications from Eritrea by one unit is $39,748. Similar calculations applied to Afghanistan – a stronger aid recipient but also a wider source of asylum seekers – show that a 10 percent increase in bilateral aid to the country, corresponding to $14.47 million of extra

transfers, determines a decrease of 77 applications. Hence, the 'cost' of each non-application from Afghanistan is $187,922. The same calculations apply when aid has a positive effect. However, many higher income developing countries, such as Chile, Saudi Arabia, Kuwait or United Arab Emirates, are typically less dependent on foreign aid than lower income ones.

Further findings are that both refugees and immigrant networks exert a pull effect on asylum seeker inflows. Coefficients on immigrants are always significant, while those on refugees are significant only in columns 1, 2 and 7. Moreover, once endogeneity is controlled for, immigrant networks exert a stronger pull effect on asylum applicants than refugees (column 7). This can be explained by immigrants having a deeper integration in the destination country than refugees, and hence a higher capability to provide concrete support to asylum seekers. The positive effect also shows that, on average, immigrants consider asylum seekers from their home countries as their kind and are willing to accept them in their communities. Distance, as expected, has a negative and significant impact: a 1 percent increase in distance leads to 0.16 percent fewer applications (column 7). This is consistent with empirical evidence showing that the great majority of world refugees move to nearby countries, with only a minor proportion of them migrating to the more distant OECD destination.[5] None of the origin countries in the sample is in the same region of, or shares a border with, the selected Western economies.

Asylum applications in rich countries decrease as origin countries develop; this result is robust to the different specifications of Table 1. The coefficient on *pcGDP orig.* is negative and significant in the pooled OLS specification of column 1; in columns 2-7, the *Total effect* of *pcGDP* orig. is also negative and significant. It is calculated as the sum of the coefficient on *pcGDP orig.* and on the interacted term (*Bilateral aid)*(pc GDP orig.)* evaluated at the average value of *Bilateral aid*. This supports similar previous findings in Hatton (2009) and Neumayer (2005). It also shows that a positive influence of aid on development would indirectly deter asylum inflows.[6] Again, this does not provide support to the hypothesis that aid transfers to developing

[5] Hatton (2009, p.187) reports that '[o]nly a small proportion of those who are displaced become asylum seekers in Western countries and fewer still are accepted as genuine refugees. The applications to industrialised countries are on average less than 5 percent of the refugee stock [during 1970-2005]. Most of those who are counted as refugees by the UNHCR are displaced into neighbouring countries and often into the poverty and squalor of refugee camps near the border.'

[6] Despite the OECD states that ODA 'is administered with the promotion of the economic development and welfare of developing countries as its main objective', the empirical literature does not find a clear and robust effect of aid transfers on development.

countries, directly and indirectly, boost asylum inflows (Clemens and Sandefur 2105). The coefficient on *Population orig.* is positive and significant in columns 1-6. Regarding the destination economy, average income, a proxy for the expected wage, has a positive and significant effect on asylum applications in column 7; it will considered more thoroughly in Table 2a.

5.2. Robustness and sensitivity.

Table 2a shows the results of testing the effect of other cofactors on asylum applications. Column 1 includes variables concerning characteristics of the destination country; column 2 includes variables on characteristics of the origin economy; column 6 is the most complete specification. As expected, the coefficients on the rate of unemployment in the destination country are negative and significant (columns 1 and 6). If unemployment at destination increases by 1 percentage point, asylum applications diminish by 2.1 percent, with significance at 1 percent (column 6). This result supports previous findings (Thielemann 2004). The effect of per capita GDP at destination on asylum applications is not robust across the different specifications. It is positive and significant in columns 2-5, but not in column 1 or in the more complete model of column 6. A similar finding is in Hatton (2016) and other studies on refugees and asylum seekers. Combined with the more robust result on unemployment, it suggests that asylum seekers value the prospect of finding a job more than the level of expected wages.

Also as expected, the political conditions and the level of civil liberties in the origin country strongly and positively influence individuals' decisions to move to the OECD destination. A 1 percent increase in political terror leads to an increase in applications of about 0.3 percent, while a decrease of 1 percent of civil liberties determines an increase in asylum inflows of 0.09 percent (columns 2 and 6). These results provide support to Hatton (2015). In Moore and Shellman (2007), higher levels of dissident violence and government terror increase the number of refugees relative to the number of internally displaced. The tendency of the origin country to be prone to 'produce' refugees, *Refugees to other countries*, has a small but positive influence on the applications in the OECD destination (column 6). On the other hand, natural disasters have no influence on the number of asylum seekers. This can suggest that people see natural disasters as transitory phenomena they can overcome without moving to a faraway destination. A similar result is in Moore and Shellman (2007)

Table 2a - Dependent variable: bilateral asylum applications. Robustness. Sys-GMM

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Asylum applications $_{t-1}$ | 0.801*** | 0.788*** | 0.802*** | 0.809*** | 0.803*** | 0.786*** |
| | (0.014) | (0.014) | (0.014) | (0.003) | (0.014) | (0.014) |
| Bilateral aid $_{t-1}$ | -0.182* | -0.221** | -0.178* | | -0.205** | -0.175* |
| | (0.095) | (0.092) | (0.096) | | (0.094) | (0.096) |
| (Bilateral aid $_{t-1}$)*(pcGDP orig.) | 0.028** | 0.031** | 0.027** | | 0.029** | 0.028** |
| | (0.013) | (0.013) | (0.013) | | (0.013) | (0.013) |
| (Total aid$_{t-1}$ )*(pcGDP orig.) | | | | 0.019*** | | |
| | | | | (0.003) | | |
| Bilateral refugees $_{t-1}$ | 0.048*** | 0.042*** | 0.056*** | 0.040*** | 0.054*** | 0.034*** |
| | (0.012) | (0.013) | (0.012) | (0.002) | (0.012) | (0.013) |
| Bilateral immigrant flows $_{t-1}$ | 0.097*** | 0.106*** | 0.101*** | 0.088*** | 0.099*** | 0.106*** |
| | (0.024) | (0.024) | (0.024) | (0.005) | (0.024) | (0.023) |
| Distance | -0.179*** | -0.166*** | -0.167*** | -0.184*** | -0.166*** | -0.180*** |
| | (0.025) | (0.025) | (0.024) | (0.006) | (0.025) | (0.026) |
| pcGDP dest. | -0.019 | 0.211*** | 0.140** | 0.170*** | 0.167*** | -0.025 |
| | (0.065) | (0.058) | (0.059) | (0.011) | (0.055) | (0.070) |
| Population dest. | -0.006 | 0.005 | -0.019 | 0.010** | -0.009 | 0.003 |
| | (0.022) | (0.024) | (0.024) | (0.004) | (0.022) | (0.025) |
| Unemploy. rate | -0.017*** | | | | | -0.021*** |
| | (0.004) | | | | | (0.004) |
| pcGDP orig. | -0.138*** | -0.128*** | -0.152*** | -0.203*** | -0.143*** | -0.130*** |
| | (0.031) | (0.030) | (0.030) | (0.019) | (0.031) | (0.030) |
| Population orig. | 0.002 | -0.033* | 0.012 | 0.020*** | 0.000 | -0.022 |
| | (0.017) | (0.019) | (0.016) | (0.004) | (0.017) | (0.018) |
| Refugees other destinations | | 0.007 | | | | 0.014** |
| | | (0.006) | | | | (0.006) |
| Political terror | | 0.305*** | | | | 0.299*** |
| | | (0.040) | | | | (0.040) |
| Civil liberties | | 0.090** | | | | 0.085** |
| | | (0.035) | | | | (0.035) |
| Natural disasters | | 0.004 | | | | 0.004 |
| | | (0.005) | | | | (0.005) |
| Aid from all others | | | -0.042*** | | | -0.042*** |
| | | | (0.015) | | | (0.015) |
| Total aid $_{t-1}$ | | | | -0.158*** | | |
| | | | | (0.024) | | |
| Bilateral trade agreements | | | | | -0.019 | 0.025 |
| | | | | | (0.040) | (0.041) |
| Time dummies | yes | yes | yes | yes | yes | yes |
| Country-pair effect | yes | yes | yes | yes | yes | yes |
| Origin effects | yes | yes | yes | yes | yes | yes |
| Destination effects | yes | yes | yes | yes | yes | yes |
| AR(2) | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.003 |
| AR(3) | 0.107 | 0.121 | 0.104 | 0.102 | 0.1 | 0.131 |
| Hansen J test (P-value) | 0.086 | 0.084 | 0.089 | 0.111 | 0.088 | 0.097 |
| Hansen diff. J test (P-value) | 0.478 | 0.541 | 0.603 | 0.999 | 0.471 | 0.53 |
| Number of instruments | 1,011 | 1,014 | 1,011 | 990 | 1,010 | 1,017 |
| Number of country-pair | 1,183 | 1,181 | 1,183 | 1,185 | 1,183 | 1,181 |
| Observations | 14,076 | 14,055 | 14,076 | 14,099 | 14,076 | 14,055 |

*Note*s: Robust standard errors clustered by country-pairs in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Corrected standard covariance matrix, robust to panel-specific autocorrelation and heteroskedasticity. The sample is a panel comprising data from 1993 to 2013. All variables are in logs except *Unemploy. rate*. Sys-GMM, in levels and differences: LDV, Bilateral aid, refugees and immigrants are treated as potentially endogenous, all other control variables are treated as predetermined; instrumented for using their own lags in level and differences. AR (2) and AR (3) are second-step and third-step Arellano-Bond test for serial correlation. AR(1), not reported, = 0.

and Clemens (2014). Neumayer (2005) finds that natural disasters and famine generate internal or cross border migration, rather than flight to distant destinations.

What is the influence of aid provided by all other countries on the applications to the Western destination, *d*? The regressor *Aid from all others* includes all donors except *d.* Columns 3 and 6 show that it generates negative and significant cross-donor spillovers: aid transfers from all other countries to *o* reduces applications from *o* in *d*. This can be partly due to aid making living conditions more bearable in the origin country, and partly to its attraction-for-the-donor effect, which, in this case, 'deviates' asylum seekers from *d* to other donors[7]. A similar question concerns the effect of aggregate aid – from all donors including *d* – on the applications from country *o* to *d*. Differently from *Bilateral aid*, the variable *Total aid* varies only across countries of origin. The positive coefficient on *Total aid,* lagged one year, and the negative one on the interacted term *(Total aid$_{t-1}$)*(pcGDP orig.),* both significant at the 1 percent level, confirm and reinforce the above results: aid deters asylum seeker inflows from the poorer countries and pulls applicants from medium-income developing economies (column 4).

Bilateral trade agreements between countries improve the reciprocal knowledge on the partner's institutions and social costumes and norms, potentially decreasing the costs of migration. Hence, a reasonable expectation is that *Bilateral trade agreements* has a positive influence on asylum applications. However, the coefficient on the variable is not significant, neither in column 5 nor in 6.

Table 2b presents the results of further tests of robustness and sensitivity. As in Table 2a, all specifications are Sys-GMM in levels and differences, except for column 8, where I use the PPML estimator. A potential issue concerns the possibility of sample heterogeneity and structural break. Figure 1 and Table A2 show that the patterns and geographical composition of asylum seeker flows and bilateral aid change after year 2000: asylum applications start to decline while aid transfers continue increasing. The tightening of several Western countries' policies on immigration that followed the terrorist attacks of 11 September 2001

[7] A world economy where countries minimize the expenditure in aid for given levels of social welfare functions and negative aid spillovers can be characterised by multiple equilibria. Given other countries' transfers to a specific destination, a donor can choose to reduce its own attraction effect by reducing its aid transfers and benefit from the attraction to the other donors. However, a generalised move of this kind would produce inferior equilibria: it would worsen living conditions in poor countries and lead to higher aggregate asylum inflows (Table 1). Jones (2015) finds evidence of positive bandwagon effects, especially among larger donors.

might partially explain the temporary decline in asylum inflows, but other factors could also be at work. Hence, *Bilateral aid* is split into two periods: first, it is multiplied by a dummy with value 1 in years 1993-2002 and zero otherwise and second, by a dummy with value 1 in years 2003-2013 and zero otherwise (column 1, Table 2b). Results show that in both periods the coefficients on bilateral aid and on the interacted variable are similar to the aggregate result; moreover, the difference between them is not statistically significant. Hence, the hypothesis of homogeneity and absence of structural break cannot be rejected.

The empirical literature finds that destination countries' policies and norms on the recognition of the status of refugee affect the flows of asylum seekers. A first, imperfect proxy for such policies is the proportion of rejected applications from country *o* in country *d*. UNHCR provides data on the rates of rejection only from year 2000. Results show that the variable *Proportion of rejections* has no significant effect on asylum seekers (column 2). The variable equals one minus the recognition rates used by Neumayer (2004), who, instead, finds a very small but positive effect of recognition rates on the inflows of asylum seekers to Western European countries during the period 1982-1999. A more precise indicator of countries' policies on refugees is the *Asylum Policy Index* built by Hatton and Moloney (2015). It concerns 48 origin countries and 19 destinations – including the selected 14 OECD countries of this study – during 1997-2012; it varies between destinations and is constant across origins. Its values range between – 4 and 11, with higher numbers indicating more restrictive policies. I rescaled the index to strictly positive values and transformed numbers in logs. Column 3 of Table 2b shows the effects of destination countries' policies on asylum applications. The coefficient on the *Asylum Policy Index* has the expected sign and is significant at the 1 percent level: a 10 percent increase in the index reduces asylum applications by about 1.1 percent. In Hatton and Moloney (2015), policies have stronger effects, but their dataset comprises only origin countries with more than 300 asylum applicants, while this study's more extended database includes also countries with zero applicants.

Table 2b - Dependent variable: bilateral asylum applications. Robustness. Sys-GMM, PPML

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Time periods | Rejected | Policy Index | Humanit. aid | High P. terror | PPML |
| Asylum applications $_{t-1}$ | 0.780*** | 0.803*** | 0.779*** | 0.706*** | 0.732*** | 0.664*** |
| | (0.014) | (0.014) | (0.014) | (0.023) | (0.019) | (0.016) |
| Bilateral aid$_{t-1}$ | | -0.229*** | -0.196** | | -0.209** | -0.186* |
| | | (0.089) | (0.095) | | (0.102) | (0.102) |
| (Bilateral aid$_{t-1}$)*(pcGDP orig.) | | 0.035*** | 0.030** | | 0.029** | 0.061** |
| | | (0.012) | (0.013) | | (0.014) | (0.031) |
| Aid$_{t-1}$ all others | -0.018 | -0.026* | -0.036** | 0.072*** | -0.009 | |
| | (0.015) | (0.015) | (0.015) | (0.022) | (0.017) | |
| Bilateral refugees $_{t-1}$ | 0.030** | 0.041*** | 0.037*** | 0.094*** | 0.064*** | -0.044** |
| | (0.013) | (0.012) | (0.013) | (0.021) | (0.018) | (0.017) |
| Bilateral immigrant flows $_{t-1}$ | 0.091*** | 0.108*** | 0.113*** | 0.102*** | 0.102*** | 0.006 |
| | (0.023) | (0.021) | (0.024) | (0.033) | (0.029) | (0.028) |
| Distance | -0.184*** | -0.186*** | -0.196*** | -0.256*** | -0.249*** | |
| | (0.028) | (0.024) | (0.026) | (0.041) | (0.029) | |
| pcGDP dest. | -0.074 | 0.096 | -0.028 | 0.006 | -0.009 | 1.278** |
| | (0.088) | (0.070) | (0.072) | (0.086) | (0.091) | (0.581) |
| Population dest. | 0.030 | 0.007 | 0.002 | 0.010 | 0.034 | -6.854*** |
| | (0.021) | (0.023) | (0.026) | (0.032) | (0.031) | (2.018) |
| Unemployment rate | -0.030*** | -0.021*** | -0.024*** | -0.019*** | -0.022*** | |
| | (0.006) | (0.004) | (0.004) | (0.005) | (0.005) | |
| pcGDP orig. | -0.095*** | -0.149*** | -0.137*** | -0.063*** | -0.136*** | 0.073 |
| | (0.027) | (0.028) | (0.030) | (0.022) | (0.036) | (0.145) |
| Population orig. | -0.034* | -0.026* | -0.020 | -0.014 | 0.006 | 1.208 |
| | (0.019) | (0.016) | (0.018) | (0.024) | (0.020) | (0.802) |
| Refugees to other countries | 0.004 | 0.004 | 0.014** | 0.014 | 0.005 | |
| | (0.015) | (0.006) | (0.006) | (0.011) | (0.009) | |
| Political terror | 0.570*** | 0.209*** | 0.315*** | 0.385*** | 0.622*** | |
| | (0.118) | (0.043) | (0.040) | (0.057) | (0.062) | |
| Civil liberties | 0.267** | 0.094*** | 0.079** | 0.079 | 0.168*** | |
| | (0.135) | (0.034) | (0.035) | (0.050) | (0.054) | |
| Bilateral aid$_{t-1}$ 93-02 | -0.286** | | | | | |
| | (0.111) | | | | | |
| Bilateral aid$_{t-1}$ 03-13 | -0.150** | | | | | |
| | (0.061) | | | | | |
| (Bilateral aid 93-02)*(pcGDP orig.) | 0.043*** | | | | | |
| | (0.016) | | | | | |
| (Bilateral aid 03-12)*(pcGDP orig.) | 0.022** | | | | | |
| | (0.009) | | | | | |
| Prop. Rejected applications | | 0.064 | | | | |
| | | (0.068) | | | | |
| Asylum Policy Index | | | -0.114*** | | | |
| | | | (0.021) | | | |
| Bilateral humanitarian aid | | | | -0.058** | | |
| | | | | (0.030) | | |
| Time dummies | yes | yes | yes | yes | yes | yes |
| Country-pair effects | yes | yes | yes | yes | yes | yes |
| Origin effects | yes | yes | yes | yes | yes | no |
| Destination effects | yes | yes | yes | yes | yes | no |
| Ar (2) | 0.003 | 0.001 | 0.003 | 0.015 | 0.294 | |
| AR (3) | 0.135 | 0.291 | 0.168 | 0.765 | 0.705 | |
| Hansen J-test (P value) | 0.165 | 0.054 | 0.075 | 0.371 | 0.296 | |
| Hansen diff. J-test (P value) | 0.847 | 0.307 | 0.33 | 0.704 | 0.924 | |
| Number of instruments | 1,033 | 939 | 985 | 864 | 1,015 | |
| Number of country-pair | 1,183 | 1,173 | 1,181 | 1,016 | 1,084 | 1,152 |
| Observations | 14,078 | 11,473 | 13,886 | 7,528 | 9,481 | 13,977 |
| R-squared | | | | | | 0.788 |
| Sample | Full | 2000-2013 | 1997-2012 | Full | Pol. t.> av. | Full |

Robust standard errors clustered by country-pairs in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Corrected standard covariance matrix, robust to panel-specific autocorrelation and heteroskedasticity. The sample is a panel comprising data from 1993 to 2013. All variables are in logs except *Unemploy. rate*. Sys-GMM, in levels and differences: LDV, Bilateral aid, refugees and immigrants are treated as potentially endogenous, all other control variables are treated as predetermined; variables instrumented for using their own lags in level and differences. AR (2) and AR (3) are second-step and third-step Arellano-Bond test for serial correlation. AR(1), not reported, = 0. Column (7): countries of origin with above average Political terror.

Up to now the variable of interest, *Bilateral aid*, concerned the totality of aid transfers (including development, education, trade, infrastructure, other purposes, and humanitarian aid). The underlying hypothesis was that all aid improving living conditions in the recipient country could influence the choices – of staying or leaving, and of destination – of potential refugees. However, it can be thought that people in critical and extreme situations may be more directly influenced by humanitarian aid, which is specifically conceived for these events, than by broad donations. Hence, a variable reporting data on *Humanitarian bilateral aid* from *d* to *o* replaces *Bilateral aid*, and its effect on asylum seekers is tested. Data on humanitarian aid are extracted from the same OECD dataset on foreign aid that provides the data on Official Development Assistance used above, but results are not strictly comparable to previous ones because observations are about 50 percent of those on *Bilateral aid*. Moreover, the geographical distributions of the two types of aid recipients differ: humanitarian aid is more concentrated in poor and politically dangerous countries. The coefficient on *Humanitarian bilateral aid* is - 0.06, significant at the 5 percent level (column 4, Table 2b).[8] To control whether humanitarian aid is also related to the average income of the origin country, I also tested the effect of the interacted variable, (*Humanitarian bilateral aid*)*(*pcGDP orig.*), but coefficients, not shown to save space, on the main term and on the interaction are both not significant. Hence, humanitarian aid has a deterring effect on asylum seeker applications that is invariant in the origin countries' average incomes.

My central hypothesis, that the level of development of the origin country can influence the effects of aid on asylum applications, finds support in the data. However, in principle, other characteristics of countries could also influence the effects of aid. To test this possibility, I use the base specification of Table 1 and interact *Bilateral aid* with two variables that have a robust influence on asylum applications, and in principle could influence aid effects, they are *Distance* and *Political terror*. In the first case, the effect of aid on asylum inflows can be expected to be stronger for nearer countries, with lower costs of immigration; in the second, aid could deter asylum inflows more effectively where levels of political terror are not too high. Conditions

[8] Nyberg Sørensen et al. (2003) state that 'aid selectivity tends to allocate development aid to the well performing countries and humanitarian assistance to the crisis countries and trouble spots. However, development aid is more effective than humanitarian assistance in preventing violent conflicts, promoting reconciliation and democratization, and encouraging poverty-reducing development investments by migrant diasporas.' pg.6.

of high political disruption might weaken the effects of aid transfers. However, results show that, in both cases, coefficients on the interacted variables are not significant. Hence, distance between origin and destination or the level of political terror do not influence the effect of aid in asylum inflows. Subsequently, I tested the interactions between *Bilateral aid* and the other regressors; also in these cases, coefficients on the interacted variables are not significant. Results, not shown to save space, are available upon request

It has been hypothesised that some applicants could be 'bogus' asylum seekers (Neumayer, 2005). For example, some irregular immigrants who know that they do not fulfil the conditions to obtain the refugee status might apply just to avoid deportation, at least for the time needed for the application to be processed. To control for this possibility, I restrict the sample to countries of origin with above average levels of political terror. Presumably, they are more likely to generate flows of 'genuine' asylum applicants. Column 7 shows that all coefficients, including those on *Bilateral aid* and the interacted term, are similar to those of previous regressions, except for the coefficients on *Political terror* and *Civil liberties*, which, as could be expected, are significantly higher.

A further potential issue relates to zeros in the dependent variable. They about 22 percent of the total observations, which is not a proportion that should lead to biases in coefficients.[9] However, to check for this possibility, I use the Pseudo Poisson Maximum Likelihood (PPML) method of estimation, proposed by Santos Silva and Tenreyro (2010). With it, the dependent variable can be used in levels rather than in logs and zero values of applications can be included as they are. Column 8 reports the PPML coefficients on bilateral aid, the interacted variable, and other cofactors. Results remain very similar to those of previous specifications.

A possible further check might consist in substituting zeros for the missing observations of the dependent variable, and running the regressions on the augmented dataset. Missing values in asylum applications are about 18 percent of total observations. The substitution would be justified only if there were good reasons to presume that missing observations coincide with very low numbers of asylum applicants.

[9] There is only one country-pair in one year (in 33,222) with zeros for both asylum seekers and bilateral aid (Denmark-Comoros). The proportion of zeros in the variable of interest, bilateral aid, is 4.5 percent.

However, a check on the countries' sources of data shows that this is not the case. Each country's statistics depend on specific practices and methods of data collection, rather than on the magnitude of the flows. For example, OECD Population Statistics includes figures from Canada only from year 1996, but Canadian sources of data show that substantial numbers of asylum seekers and refugees were present in the country before that time. As similar evidence is available for other destinations, I do not perform the substitution.

5.4 Aid and immigration.

Does bilateral aid affect voluntary migrant inflows? This question matters because aid transfers meant to influence only asylum inflows might have unintended effects on immigrants. For example, aid to poor countries might deter asylum seekers but boost voluntary immigration. Hence, testing the effects of aid on voluntary migration is useful to uncover the overall effects of aid on immigration – forced and voluntary –.

Table 3 depicts the results of substituting *Immigrant inflows* in country *d* from country *o* for *Asylum applications*; regressors are the same of Tables 1-2a,b It shows that, overall, *Bilateral aid* has no effect on immigrants: coefficients on the variable are positive in column 1, negative in column 5 and not significant in the other regressions. Column 1 depicts the coefficients of the OLS regression with time trend and time effects. In column 2, the OLS specification includes country and country-pair effects. Columns 3-6 are based on System GMM tests in levels and differences, where *Bilateral aid*, *Bilateral refugees* and the lagged dependent variable are potentially endogenous and the other variables are predetermined. Column 4 tests whether the effect of *Bilateral aid* on immigrants depends on the average income of the origin country. Results are that the coefficients on the interacted term and on *Bilateral aid* are not significant. Hence, there is not a unique and robust link between aid and voluntary migration; this supports the results of previous research (Böhning et al., 1994).

A related question concerns the potential indirect effects of aid on migration, particularly through development in the origin country. The influence of average income in the origin country on migration to the destination economy is positive and significant in the pooled OLS specification (column 1), but not in columns 2-4 (Table 3). However, as already seen, the relation could be non-linear. As already seen, some authors hypothesise a bell-shaped relationship between emigration and development (among others, Faini and

Venturini 1993; de Haas 2010, 2011; Clemens 2014). To test whether the effect of income on migration to the rich destination is non-linear, Columns 5 and 6 include the squared term of *pcGDP orig*. In the base specification, the coefficients on *pcGDP orig.* and on the squared term have the 'right' signs but are not significant (while the coefficient concerning the direct effect of aid on immigration is negative and significant at the 10 percent level). The two coefficients, on income and the squared term, are significant only in the presence of other cofactors, in column 6. Therefore, results suggesting a bell-shaped relationship between migration and development are not robust to different specifications. The results of Table 3 show that aid has no direct effect on asylum applications, and that its potential indirect effects through development remain highly uncertain. More generally, this study finds that aid affects the inflows of asylum seekers, but not those of immigrants.

Other results are that, differently than expected, the average income of the destination country does not have a robust positive and significant effect on immigration. The coefficient is strongly positive and highly significant in column 2, which includes time, country-pair and countries effects (except for the lagged dependent variable, a similar specification is in Ortega and Peri 2013). However, when the Sys-GMM controls for endogeneity, the coefficient becomes negative, in columns 4-5, and negative and significant in column 6. These results do not give support to the thesis that migration is strongly driven by differences between the average incomes of origin and destination country (Hatton and Williamson 2005; Mayda 2010; Ortega and Peri 2013). On the other hand, the dimension of the country, proxied by *Population dest.*, represents a robust pull factor (columns 1-6), while higher levels of unemployment exert the opposite effect (column 6). Overall, migrants appear to prefer bigger countries of destination with lower rates of unemployment. Furthermore, factors typically used in studies on asylum migration, such as *Political terror* and *Civil liberties*, affect also migrants. The coefficient on *Political terror* is positive and significant at the 1 percent, albeit its effect is less than half than that on asylum seekers in Tables 2a and 2b, while lower levels of *Civil liberties*, which are a strong push factor for asylum seekers, appear to deter voluntary migration to the OECD destination (column 6).

## Table 3 - Dependent variable: Immigrants.

6.

| | (1) OLS | (2) OLS-FE | (3) Sys-GMM | (4) Sys-GMM | (5) Sys-GMM | (6) Sys-GMM |
|---|---|---|---|---|---|---|
| Bilateral immigrant flows $_{t-1}$ | 0.936*** | 0.654*** | 0.897*** | 0.828*** | 0.822*** | 0.801*** |
| | (0.004) | (0.017) | (0.016) | (0.020) | (0.016) | (0.017) |
| Bilateral aid $_{t-1}$ | 0.007*** | 0.001 | -0.009 | -0.055 | -0.012* | 0.007 |
| | (0.003) | (0.005) | (0.009) | (0.062) | (0.007) | (0.007) |
| (Bilateral aid $_{t-1}$)*(pcGDP orig.) | | | | 0.009 | | |
| | | | | (0.008) | | |
| Bilateral refugees $_{t-1}$ | 0.009*** | 0.037*** | 0.023*** | 0.022*** | 0.041*** | 0.022** |
| | (0.002) | (0.006) | (0.007) | (0.009) | (0.009) | (0.010) |
| Distance | -0.044*** | | -0.070*** | -0.121*** | -0.103*** | -0.138*** |
| | (0.007) | | (0.015) | (0.022) | (0.018) | (0.021) |
| pcGDP dest. | -0.080*** | 1.167*** | 0.009 | -0.064 | -0.064 | -0.236*** |
| | (0.022) | (0.196) | (0.043) | (0.049) | (0.051) | (0.061) |
| Population dest. | 0.059*** | 0.507* | 0.098*** | 0.148*** | 0.149*** | 0.175*** |
| | (0.005) | (0.294) | (0.014) | (0.019) | (0.015) | (0.018) |
| Unemployment dest. | | | | | | -0.016*** |
| | | | | | | (0.003) |
| pcGDP orig. | 0.022*** | 0.007 | 0.020 | 0.011 | 0.155 | 0.918*** |
| | (0.004) | (0.041) | (0.014) | (0.025) | (0.163) | (0.237) |
| (pcGDP orig.)$^2$ | | | | | -0.006 | -0.060*** |
| | | | | | (0.011) | (0.016) |
| Population orig. | 0.043*** | 0.093 | 0.070*** | 0.117*** | 0.116*** | 0.125*** |
| | (0.004) | (0.108) | (0.011) | (0.015) | (0.011) | (0.013) |
| Refugees to other countries | | | | | | -0.010 |
| | | | | | | (0.008) |
| Political terror | | | | | | 0.122*** |
| | | | | | | (0.029) |
| Civil liberties | | | | | | -0.099*** |
| | | | | | | (0.030) |
| Bilateral trade agreements | | | | | | 0.027 |
| | | | | | | (0.026) |
| Time dummies | yes | yes | yes | yes | yes | yes |
| Country-pair effects | no | yes | yes | yes | yes | yes |
| Origin effects | no | yes | yes | yes | yes | yes |
| Destination effects | no | yes | yes | yes | yes | yes |
| Ar (2) | | | 0.07 | 0.07 | 0.07 | 0.07 |
| AR (3) | | | 0.24 | 0.235 | 0.241 | 0.218 |
| Hansen J-test (P value) | | | 0.084 | 0.143 | 0.56 | 0.368 |
| Hansen diff. J-test (P value) | | | 0.981 | 0.905 | 0.999 | 0.957 |
| Number of instruments | | | 1,029 | 1,029 | 1,150 | 1,154 |
| Number of country_pair | 1,198 | 1,198 | 1,198 | 1,196 | 1,198 | 1,195 |
| Observations | 14,951 | 14,951 | 14,951 | 14,929 | 14,951 | 14,925 |
| R-squared | 0.955 | 0.9611 | | | | |

Robust standard errors clustered by country-pairs in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Corrected standard covariance matrix, robust to panel-specific autocorrelation and heteroskedasticity. The sample is a panel comprising data from 1993 to 2013. All variables are in logs except Unemploy. rate. Sys_GMM, in levels and differences: LDV, Bilateral aid and refugees are treated as potentially endogenous, all other control variables are treated as predetermined; variables instrumented for using their own lags in level and differences. AR (2) and AR (3) are second-step and third-step Arellano-Bond test for serial correlation. AR(1), not reported, = 0.

6. Summary and conclusions,

The main question of this study was whether aid transfers to developing countries influences the inflows of asylum seekers to rich economies. To this purpose, I measured the impact of bilateral aid to 113 developing countries from 14 OECD donors on asylum seeker inflows during 1993-2013. Using this comprehensive dataset, I found that aid deters asylum inflows from poor countries, but can attract applicants from medium-income developing economies. Most of the deterring effects concern inflows from Sub-Saharan Africa; this is consistent with empirical data showing that most movements of refugee people in Sub-Saharan Africa remain within the region (Lucas 2006; UNHCR).

More generally, this paper's findings suggest that aid transfers to poor countries can improve living conditions to the extent that some potential leavers choose instead to stay in the home country and endure the difficult situation there or to move – perhaps temporarily – to a nearby location. The same aid transfers can have a lower impact on the living conditions of medium-income developing economies, but appear to attract potential leavers to the donor country. Several studies find that foreign aid is often unrelated to the real needs of recipient economies; this study show that aid transfers aiming at influencing asylum inflows should target poor countries, which presumably are also those with greater needs. Consistently, transfers of humanitarian aid, which concern fewer countries – those more politically unstable and subject to natural disasters –, have a negative and linear effect on bilateral asylum seeker inflows.

Moreover, development in the origin country tends to reduce the flows of asylum seekers into the rich countries. This result, robust to all specifications, is of particular interest because it shows that aid transfers that boost economic development in the home countries weaken the inflows of applicants. In this case, the negative effect of aid on asylum inflows would be independent of the initial stage of development of the recipient country. OECD states that the main goal of ODA transfers is development of the recipient economy; this study shows that, through development, aid influences asylum and refugee inflows.

A question related to the feasibility of using aid as a policy instrument concerns its potential side effects on voluntary migration. Could aid to poor countries deter asylum inflows and at the same time attract economic migrants? I find that foreign aid has no effect on immigration; the result is robust to all specifications. Hence, aid provided with the goal of influencing asylum inflows will affect just these inflows, and not those of

immigrants. A second issue concerns the effects of development on immigration to the OECD economy. In this paper's results, higher average income in the origin country has no robust effects on immigration. Hence, aid that promotes development has an uncertain or no influence on immigration. Overall, aid as a policy tool would affect asylum but not immigrant inflows.

Other findings of this study are that aid has negative cross-donor spillovers: more aid from other donors reduces the number of asylum applications in the OECD destination. This implies that a potential donor can find free riding convenient. Also, as in previous studies, political terror and lack of civil liberties in the origin country have strong and robust push effects on asylum flows. Hence, concerted aid transfers made conditional on improvements in the economic and political institutions of the developing country will have stronger overall effects on asylum inflows than uncoordinated and unconditional ones.

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# APPENDIX

## Table A1 - Data definitions and sources. List of countries.

| Variable | Definition | Source |
|---|---|---|
| Asylum seekers | Log of inflows of asylum seekers by nationality (from o to d), annual submissions. | OECD Population Statistics, and UNHCR statistics |
| Aid | Log of Official Development Assistance commitments (in 2013 US $) | OECD, International Development Statistics |
| Humanitarian aid | Log of Humanitarian assistance (in 2013 US $) | OECD, International Development Statistics |
| Refugee stocks | Log of number of refugees from origin to destination country each year | UNHCR Statistics |
| Immigrant flows | Log of immigrant flows from origin to destination, each year. | OECD, Bilateral Migration Statistics. |
| Distance | Log of weighted distance, in thousand km, between origin and destination | CEPII www.cepii.fr/francgraph/bdd/distances.pdf |
| Proportion rejected | Share of rejected asylum applications on total applications in country *d* from country *o* at time *t*. | UNHCR Statistics |
| Asylum Policy Index | Log of composite index of policies concerning refugee status recognition. Varies between 1 and 16, with higher numbers indicating more restrictive policies | Hatton Moloney (2016) |
| Population orig. / dest. | Log of number of people in country *o, d*. | World Bank - World Development Indicators |
| pc GDP orig. / dest. | Log of per capita Gross Domestic Product in country *o, d*. Constant 2005 US$. | World Bank - World Development Indicators |
| Political terror | Scale from 1 to 5. Higher numbers indicate higher levels of political terror. | *The Political Terror Scale*. http://www.politicalterrorscale.org/ |
| Civil liberties | Rating from 1 to 7: 1 represents the highest and 7 the lowest degree of civil liberties. | *Freedom House*. https://freedomhouse.org/report/methodology-freedom-world-2017 |
| Natural Disasters | Number of deaths. | EM-DAT. The International Disaster Database. http://www.emdat.be/database |
| Unemployment rate destination | Unemployment rate in destination country | International Labour Statistics. |
| Bilateral Trade agreements | Bilateral preferential trade agreements, average of WTO-plus. Varies between 0 (no agreements) full range of agreements. | World Trade Organization. Preferential Trade Agreements. |

Origin countries. Europe: Albania, Bosnia-Herzegovina, Belarus, Moldova, Macedonia, Montenegro, Serbia, Turkey, Ukraine; North Africa: Libya, Morocco, Algeria, Egypt, Tunisia; South of Sahara: Angola, Benin, Burundi, Burkina Faso, Botswana, Central African Republic, Côte d'Ivoire, Comoros, Congo Democratic Rep., Congo Cape Verde, Djibouti, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, Kenya, Rwanda, Sudan, Senegal, Sierra Leone, Somalia, Chad, Togo, Tanzania, Uganda, South Africa, Zambia, Zimbabwe, Liberia, Lesotho, Madagascar, Mali, Mozambique, Mauritania, Mauritius, Malawi, Namibia, Niger, Nigeria; South and Central Asia: Afghanistan, Armenia, Azerbaijan, Bangladesh, Bhutan, Georgia, India, Kazakhstan, Kirghizstan, Sri Lanka, Myanmar, Nepal, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; Middle East: United Arab Emirates, Iran, Iraq, Jordan, Lebanon, Saudi Arabia, Syria, Yemen, Kuwait; Far East Asia: China, Indonesia, Cambodia, Laos, Mongolia, Malaysia, Philippines, Thailand, Vietnam, Papua New Guinea; South America: Argentina, Bolivia, Brazil, Chile, Colombia, Guyana, Peru, Venezuela, Ecuador; North and Central America: Cuba, Dominica, Dominican Republic, Guatemala, Honduras, Haiti, Jamaica, Nicaragua, El Salvador, Trinidad and Tobago. Destination countries: Australia, Austria, Belgium, Canada, Germany, Denmark Spain, France, Great Britain, Italy, Netherlands, Norway, Sweden United States.

## Table A2 - Bilateral aid and asylum seekers: top 20 origin countries:

| 1993-2000 | | | | 2001-2013 | | | |
|---|---|---|---|---|---|---|---|
| Bilateral aid recipient | | Origin of asylum seekers | | Bilateral aid recipient | | Origin of asylum seekers | |
| Egypt | 152.63 | Serbia | 3906 | Iraq | 355.14 | Serbia | 1597 |
| China | 83.77 | El Salvador | 2517 | Afghanistan | 219.58 | Iraq | 1495 |
| Bosnia and Herzegovina | 65.73 | Turkey | 2208 | Nigeria | 134.65 | China | 1385 |
| Mozambique | 61.66 | Iraq | 1977 | Congo, D.R. | 130.78 | Afghanistan | 1253 |
| Tanzania | 57.70 | Bosnia - Herzegovina | 1548 | Ethiopia | 95.28 | Somalia | 939 |
| Indonesia | 55.98 | Guatemala | 1490 | Tanzania | 87.89 | Turkey | 836 |
| Côte d'Ivoire | 54.51 | Afghanistan | 1363 | Mozambique | 81.45 | Iran | 743 |
| Bangladesh | 53.78 | China | 1273 | Sudan | 80.82 | Pakistan | 694 |
| Papua New Guinea | 50.93 | Sri Lanka | 1200 | Pakistan | 79.31 | Nigeria | 600 |
| India | 44.74 | Somalia | 1076 | Kenia | 63.82 | Syria | 543 |
| Uganda | 40.84 | India | 1001 | Indonesia | 62.55 | Congo, D.R. | 531 |
| Bolivia | 40.60 | Iran | 984 | India | 62.52 | Sri Lanka | 530 |
| Ethiopia | 40.19 | Pakistan | 798 | Uganda | 59.12 | Haiti | 499 |
| Vietnam | 39.00 | Congo, D.R. | 698 | China | 59.09 | Eritrea | 489 |
| Cameroon | 38.67 | Haiti | 647 | Egypt | 58.78 | India | 466 |
| Zambia | 37.29 | Algeria | 528 | Colombia | 55.70 | Colombia | 423 |
| Nicaragua | 36.94 | Vietnam | 462 | Bangladesh | 54.19 | Armenia | 354 |
| Senegal | 35.40 | Nigeria | 450 | Vietnam | 54.01 | Algeria | 350 |
| Philippines | 34.58 | Armenia | 431 | Haiti | 51.15 | Bangladesh | 306 |
| Morocco | 34.07 | Albania | 327 | Serbia | 50.06 | Georgia | 303 |

Notes: number of asylum seekers: yearly average in destination country. Bilateral aid: yearly average in recipient country, in constant million US$.

Table A3 - Summary statistics

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Bilateral aid (mil constant US$) | 27,875 | 29.1 | 133.4 | 0 | 13021.8 |
| Aid from all others (mil. constant US$) | 31,976 | 667.8 | 1,038.4 | 2.4 | 25,330.1 |
| Humanitarian aid (mil. constant US$) | 11,830 | 6.6 | 30.8 | 0 | 823.6 |
| Asylum seekers | 27,184 | 230 | 1,120.5 | 0 | 75,138 |
| Refugees | 21,148 | 1,333.4 | 7,583.1 | 1 | 350,000 |
| Immigrant inflows | 27,651 | 1,402.6 | 5,431.3 | 0 | 165,000 |
| Distance | 33,222 | 7,099 | 3,468 | 491.8 | 18,008.3 |
| pc_GDP origin (constant 2005 US$) | 31,990 | 2,656 | 5,019.8 | 68.6 | 46856.8 |
| Population origin (mil.) | 33,194 | 44.00 | 159.4 | 0.1 | 1357.4 |
| Refugees other destinations | 32,858 | 89,473 | 312,136 | 0 | 3809767 |
| Natural disasters (total deaths) | 25,060 | 817.34 | 8,133.5 | 0 | 229566 |
| Proportion rejected | 22,148 | 58.22 | 3.34 | 53.1 | 63.98 |
| Asylum Policy Index | 26,894 | 7.15 | 2.85 | 1 | 16 |
| Political terror | 32,536 | 2.97 | 0.95 | 1 | 5 |
| Civil liberties | 32,816 | 4.38 | 1.53 | 1 | 7 |
| pc_GDP destination (constant 2005 US$) | 33,222 | 37,551 | 9,251 | 19,448 | 69,094.8 |
| Population destination (mil.) | 33,222 | 50.02 | 70.98 | 4.3 | 316.5 |
| Unemployment r. destination | 33,222 | 7.58 | 3.50 | 2.5 | 26.1 |

Table A4 - Correlation matrix

| | Bilateral asylum | Bilateral refugees | Bilateral immigrants | Bilateral aid | Bilateral humanitarian aid | pcGDP dest. | Population dest. | pcGDP orig. | Population orig. | Distance |
|---|---|---|---|---|---|---|---|---|---|---|
| Bilateral asylum | 1 | | | | | | | | | |
| Bilateral refugees | 0.2475* | 1 | | | | | | | | |
| Bilateral immigrants | 0.3173* | 0.2900* | 1 | | | | | | | |
| Bilateral aid | 0.0709* | 0.0798* | 0.1150* | 1 | | | | | | |
| Bilateral humanitarian a. | 0.1068* | 0.1161* | 0.0802* | 0.3926* | 1 | | | | | |
| pcGDP dest. | -0.0339* | -0.0082 | -0.0483* | 0.0261* | 0.0639* | 1 | | | | |
| Population dest. | 0.0957* | 0.1176* | 0.2692* | 0.1992* | 0.2376* | -0.0475* | 1 | | | |
| pcGDP orig. | -0.0287* | -0.0123 | -0.014 | -0.0540* | -0.0594* | 0.0252* | 0.0021 | 1 | | |
| Population orig. | 0.1049* | 0.0257* | 0.3001* | 0.0552* | -0.0123 | 0.0085 | 0.0007 | -0.0525* | 1 | |
| Distance | -0.1029* | -0.0229 | -0.0167 | 0.0399* | 0.1035* | -0.0339* | 0.2000* | -0.0289* | 0.0683* | 1 |

*Notes*: * Significant at the 1 percent level.

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