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The Aid Migration Trade-Off

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Abstract

This paper highlights an empirically significant trade-off between the aid flows delivered by donor countries and the inflows of migrants that they receive from developing countries. It draws implications for aid policy from a simple game-theoretic model, after reviewing the recent literature on the effects and motivations of foreign aid to developing countries. The paper is part of the recent effort made by economists to discover the hidden agenda behind foreign aid.

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1. Introduction

Are migrants a blessing or a curse? In rich countries, the threat of an invasion by poor migrants from the South is evoked time and again, especially before important elections. It seems that a sizable constituency exists for exerting pressure on governments with a view to inducing them to erect legal barriers against immigration. Some northern European countries that were once very liberal in this respect have recently witnessed the emergence of a National Front–type movement, with a fairly aggressive attitude toward immigration. At the same time, there are voices cautioning that keeping migrants at bay is nothing like a free good.

Remittances are the key benefit that developing countries receive from the outflows of migrants that they send to rich countries every year. For many developing countries, they exceed foreign aid receipts. Klein and Harford (2005) demonstrate that remittances are now one of the main sources of external finance for developing countries and one that is growing steadily.

Gubert (2003) presents a striking calculation: if France accepted just 60,000 more Malian migrants, and if the new migrants had the same propensity to send remittances home as those currently living in France, total remittances would be equivalent to the aid that France is currently sending to Mali. This is a negligible number of migrants for a country whose population is more than 1000 times larger. The added migration would reduce public expenditures, as the aid budget and the French aid administration could be cut sizably and fewer police would be needed for tracking illegal migrants.

This kind of calculation suggests that the opportunity cost of fighting immigration in rich countries must be sizable. Anti-immigration constituencies must therefore perceive considerable detrimental effects on their countries, to convince them to accept these costs.

This paper attempts to identify whether there are policy tools, apart from visa control, that governments of the North can (and do) use to curb immigration from the South. In particular, we want to test whether foreign aid is such a tool. The analysis is best seen as part of a research program that seeks to discover the true agenda behind foreign aid, which the so-called aid-ineffectiveness literature has shown to be different from the proclaimed goal of boosting growth and fighting poverty in the recipient country. The following paragraphs review studies on the effects and determinants of migration. Section 2 discusses the aid-ineffectiveness debate. In section 3, a simple game-theoretic model is sketched, and some testable predictions are derived. The empirical analysis of section 4 suggests that aid does indeed belong to the toolbox used by rich-country governments to control immigration. Section 5 contains the conclusions.

Impacts of Immigration Flows on Destination Countries

The effects of immigrant flows on host countries have been widely studied in the economics literature. Most of the research on this topic has looked at the impact on the labor market and, in particular, on the wages and employment rates of the receiving country's natives. The simplest theoretical model of labor market equilibrium suggests that immigration is liable to create a pecuniary externality, as an increase in the labor supply resulting from the inflow of immigrants will lead to lower wages or, in the presence of wage rigidities, to higher unemployment. In reality, this negative effect may be mitigated by adjustments in the labor market. For example, firms may move to regions where labor is becoming cheaper, thus increasing labor demand there, or natives may move away from the regions where the migrants have arrived. Using data from U.S. decennial censuses for the period 1960–90 and from the 1998–2001 current population surveys, Borjas (2003) finds that immigration has a considerable negative impact on the wages of native workers. Card (2001) shows that immigration flows in the late 1980s in U.S. cities with large immigrant populations reduced the relative employment rates of low-skilled natives by up to 1 percent and their relative wages by no more than 3 percent. Friedberg and Hunt (1995) review the theoretical and empirical literature on the impact of immigration on host countries' wages and conclude that this impact is very small. Longhi, Nijkamp, and Poot (2005), on the basis of their meta-analysis of 18 empirical studies of this type, conclude that there is a robust negative and statistically significant, but small, impact of immigrants on natives' wages and that this impact is larger in Europe than in the United States.

Beside its effects on the economy, immigration also has demographic and political effects on the host countries. From a demographic point of view, immigration may offer a way of decreasing the age-dependency ratio in industrial countries since immigrant populations are often younger than the natives and have higher fertility rates. From a political point of view, some countries may worry that immigrants threaten their national identity and their ethnic and cultural stability. The creation by French President Nicolas Sarkozy of a Ministry of Immigration, Integration and National Identity is a response to this type of anxiety. There are also fears of infiltration by potential terrorists or drug traffickers. These political concerns seem to play a role at least as important as the economic impacts described above in determining decisions by immigration authorities. Neumayer (2006) shows that the poorer, the less democratic, and the more exposed to armed political conflict a country is, the more its citizens are likely to be subject to visa restrictions. The same is true for nationals of countries that were the origins of terrorist attacks. It thus seems that migrants from the poorest countries are less welcome than migrants

from rich countries. Since the poorest countries are also the most important recipients of foreign aid, it is natural to ask whether foreign aid is used to reduce immigration from them.

Some empirical findings shed light on the determinants of the public opinion toward immigration and on its influence on immigration policies. Scheve and Slaughter (2001), using a direct measure of the U.S. population's preferences concerning immigration, obtained from the 1992 National Election Studies, show that less-skilled workers are more likely to prefer limitation of immigrant inflows into the United States. Mayda (2006), using individual-level survey data sets, finds that skilled individuals are more likely to be pro-immigration in countries where the relative skill composition of natives vis-à-vis immigrants is high. She also finds that concerns about the impact of immigration on crime rates, perceptions of the cultural effect of foreigners, racist feelings, and the size of inflows of asylum seekers affect attitudes towards immigration. According to the same paper, countries with higher per capita gross domestic product (GDP) are, on average, less open to immigration, after allowing for the influence of individual-level variables. O'Rourke and Sinnott (2006) find that individual attitudes toward immigration reflect economic interests, as well as nationalist sentiment. The authors show that among labor market participants, the highly skilled are less opposed to immigration than the low skilled; this effect is larger in richer countries than in poorer ones and in countries with greater equality than in countries with more inequality. Among those who are not in the labor force, noneconomic factors are more important than economic considerations in determining attitudes toward migration. Facchini and Mayda (2008) use a sample of 34 countries which were included in the 1995 and 2003 rounds of the International Social Survey Programme to show that voters' negative opinions toward migration explain the restrictive migration policies in place in most destination countries. They demonstrate that countries in which the median voter is more opposed to migration tend to implement more restrictive policies.

Determinants of Immigration Flows

Many arguments have been advanced explaining, without necessarily justifying, why governments of the global North want to curb immigration into their countries. The key question is whether they actually do anything about it: are there policy handles that they use to reduce inflows? Visa quotas allow only an imperfect control of immigration flows, since most developed countries have family reunification laws and asylum and refugee protection treaties that oblige them to accept some immigrants. Moreover, visa quotas do not reduce the number of illegal entrants, as discussed by de Haas (2006). Illegal aliens are estimated to add 10 or 15 percent to the foreign-born stock in countries of the Organization for Economic Co-operation and Development (OECD). Hatton and Williamson (2002) note that about 300,000 illegal immigrants

enter the United States every year, and 400,000 to 500,000 enter Western Europe. Since the visa instrument alone is not a sufficient solution, it has to be completed with other policies that affect immigration flows.

The rich empirical literature aimed at discovering the determinants of immigration flows has produced a good crop of convergent findings. Mayda (2007), using a panel of bilateral migration flows to 14 OECD countries by country of origin between 1980 and 1995, finds that income improvements in the destination countries, as well as the share of the young population in the country of origin, have positive and significant effects on emigration rates, while the distance between the countries has negative effects. Jennissen (2003), studies the economic determinants of net immigration in Western Europe for the period 1960–98. He finds that destination GDP per capita, existing migrant stock, and the educational level of the population have positive effects, while unemployment rates have a negative effect on net migration flows. Hatton and Williamson (2002) present a quantitative assessment of the economic and demographic fundamentals that drive world migration across historical periods and around the world, using data on average net immigration from 1970–75 to 1995–2000 for 80 countries. They find that the share of the population age 15–29 in the receiving country has a negative effect on its immigration rates, while that the immigrant stock has a positive effect on net immigration. They also document that a rise in domestic income relative to the world and to the region both increase a country's net immigration. Neumayer (2005), using a panel on the annual number of asylum seekers in Western European countries by country of origin between 1982 and 1999, finds that human rights abuses, political violence, and state failure, as well as economic conditions in the country of origin are the main determinants of asylum migration. He suggests that generous development assistance and the opening of protected European markets to imports from the sending countries could ease migration pressure.

From the above-cited literature, income differentials appear to be an essential determinant of the supply of immigrants. Castles (2003) claims that reducing North-South inequality is a key to effective migration management. As foreign aid is a transfer that reduces North-South income differentials, it is quite natural to ask whether foreign aid reduces migration flows. Morisson (1982) argues that the most promising way for development assistance to influence migration in the short-to-medium run is through employment-generating activities and, in the long run, by reducing population growth and improving income distribution. Surprisingly few quantitative studies exist on the link between aid and migration. Some exceptions are Rotte and Vogler (2000), who study international migration to Germany from 86 countries between 1981 and 1995 and find no significant effect from aid. Berthélemy, Beuran, and Maurel (2009) estimate the two-

way impact of aid and migration using cross-country data and find a positive impact of aid on migration in a simultaneous-equation system. The aim of this paper is to complete this literature, by testing whether foreign aid reduces immigration flows from South to North.

2. The Search for Foreign Aid's Hidden Agenda

The academic literature on foreign aid has been at times quite paradoxical. It caught the public's attention under the generic name of the "aid-ineffectiveness" literature; Easterly (2006) surveyed it in an influential review aimed at a broad audience. The aid-ineffectiveness literature shows quite consistently that foreign aid is not very successful at boosting growth and reducing poverty in recipient countries. The contributors to this body of work end up expressing severe criticism of the international community, which appears unable to pursue its proclaimed objective. The World Bank's recent slogan, "Our Dream: A World Free of Poverty," seems bound to remain just a dream. This conclusion appears to challenge the standard methodology of economics at a fundamental level. How is it that the international community has consistently spent zillions of dollars in foreign aid for nearly six decades without being "effective." Are there no error-correction mechanisms that can put an end to this "massive waste"? But the apparent paradox only concerns a small share of the academic literature on aid and is the result of some hasty interpretation of the findings.

The Aid-Ineffectiveness Puzzle

The root cause of the turmoil is that some economists have taken at face value the declared objectives of foreign aid. The stated objective has always been to boost economic growth in the recipient country. For a long time, aid was focused on filling the "saving gap"—the allegedly insufficient national saving flow that was supposed to afflict poor countries. Collier (2007) suggests that the change in emphasis which occurred in the 1980s and 1990s, from economic growth to poverty alleviation, was the result of a public relations campaign aimed at harnessing electoral support in favor of foreign aid from all sides of the political spectrum in rich countries. Academic economists, however, soon started to blow the whistle, demonstrating that there was not much empirical support for the view that foreign aid was promoting growth in poor countries or reducing significantly the incidence of poverty.

A much-cited paper by Boone (1996) triggered a wave of debate on aid ineffectiveness by showing that no significant impact of aid on growth could be found in cross-country regressions. In a highly influential paper, Burnside and Dollar (2000) argue forcefully that in analyzing the effect of aid, due account must be taken of heterogeneity among recipient countries. The authors

favor an index of the quality of macroeconomic policies as their heterogeneity parameter because their findings suggest that aid boosts growth when it is given to countries that have a sound macroeconomic policy framework. Similarly, Svensson (1999) presents cross-country regression findings showing that aid is more effective at affecting growth in more democratic countries. In the same vein, Kosack and Tobin (2006) find that foreign aid and democracy have a positive impact on economic growth and human development, provided that there is a minimum level of human capital in the recipient country. Nevertheless, the dominant diagnosis is that, in general, with some noteworthy exceptions, aid is not boosting growth. Some authors blame the failure of aid on the misconceived approach of conditionality (see, for example, Collier, 1997). A number of theorists propose clever schemes for fixing aid (see Svensson 2000, 2003; Azam and Laffont 2003). Another influential response has been to claim that aid has not been effective because there has not been enough of it—what was needed was a “big push” to lift people out of the “poverty trap.” This view was forcefully supported by Sachs (2005); Collier (2007) espoused a more subtle variant.

These findings and the response that they triggered raise a more fundamental methodological issue: do they mean that aid is ineffective, or does the true agenda of aid differ from the much-publicized goals of fostering growth and alleviating poverty? The proper methodology of economics is based on revealed-preference theory: instead of trying to assess the effectiveness of foreign aid by looking at the extent to which it achieves its stated objective, we should try to infer its true agenda from its actual achievements. When people spend zillions of dollars over decades, they must certainly have achieved a measure of success that justifies the continuation of this expenditure flow. Some economists have tried to discover the hidden agenda of foreign aid by looking at the determinants of its allocation across countries. Their results suggest that the impact of foreign aid on growth and development is probably not the crucial determinant of its allocation. For example, Burnside and Dollar (2000) find that the good quality of the macroeconomic policies pursued by a given country does not make the country more likely to receive more aid, although it does make aid more “effective.” Similarly, Svensson (1999) presents a cross-country regression analysis showing that although aid is more effective at promoting growth in more democratic countries, those countries are not more favored as aid recipients. This finding suggests that aid allocation is governed by other considerations, hinting again that there is a hidden agenda aside from the generous drive to alleviate poverty.

Donors' Revealed Preferences

The political dimension of aid allocation is further analyzed by Alesina and Dollar (2000), who find that the colonial past and strategic alliances are the main determinants of the amount of aid received by poor countries. They also show, however, that in the time-series dimension, democratization is often followed by increased aid, although there is no significant static effect of democracy. By contrast, Berthélemy and Tichit (2004), in a panel data analysis covering 137 aid recipients and 22 bilateral donors during the period 1980–99, find a significant positive impact of the Freedom House index of civil liberty and political rights. This finding is confirmed in a later study using a different estimation method (Berthélemy 2006). The latter two studies bring out quite strongly that in allocating aid, most bilateral donors seem to be guided by their self-interest and, in particular, by their commercial relationships. Fleck and Kilby (2006a) show that commercial concerns play an important part in determining the allocation of U.S. bilateral aid across countries, particularly when the president and/or Congress are conservative. The results reported by Fleck and Kilby (2006b) suggest that the validity of such a diagnosis can be extended to the case of the World Bank, whose aid allocation behavior is significantly influenced by U.S. trade and political interests. One may wonder, however, whether trade flows are perfectly exogenous, at least as far as bilateral donors are concerned. Although many donors have formally ruled out tied aid, toward the end of the 1960 to 1997 sample period considered by Fleck and Kilby (2006a) some implicit and subtle ways of tying aid probably continued in operation. Moreover, aid helps finance the trade deficit of developing countries, and this certainly increases imports from industrial countries, which are also the main donors. This effect is even more likely toward the end of the period of analysis, as trade liberalization was a prominent feature of the reform programs supported by foreign aid under the influence of the Bretton Woods institutions. Hence, some reverse causation between aid and trade may be present, channeled by various mechanisms, so that the above findings might be misleading.

Chauvet (2002) looks at the relationship between aid allocation across countries and various kinds of “sociopolitical instabilities”—referring to events that reflect political troubles in the recipient countries. She distinguishes three types: (a) elite instability, including coups d'état, revolutions, and major government crises; (b) violent instability, including political assassinations, guerrilla warfare, and civil wars; and (c) social instability, such as strikes, demonstrations, and riots. She shows that these three types of event have different effects on the allocation of aid, depending also on the kind of aid. Instabilities of types (a) and (b) have a positive impact, suggesting that aid flows are directed at governments that are under political threat, while type (c) has a negative effect, showing that aid shies away from threats directed more specifically at the

economy. These results suggest that donors give aid to recipient governments in response to political motivations, with a kind of conservative bent toward providing support to incumbent governments. Economic issues such as growth and poverty alleviation seem to play only a secondary role, in that governments facing greater “social instability”—the likely response of some constituencies to economic hardship—are somehow punished by getting less aid money. This whole line of empirical research tries to infer from the determinants of aid allocation across countries what donors are really trying to achieve, but it fails to test directly for the impact of aid on the presumed objectives.

Alesina and Weder (2002) use a slightly different empirical strategy, looking directly at the effect of aid on some potential objectives of the donors. They show that the level of corruption plaguing the recipient government does not significantly affect the allocation of aid across countries but that there is a significant effect in the other direction. Their results suggest that an increase in aid this year increases the level of corruption next year—what they call the “voracity effect.” They thus conclude that donors do not care about corruption in the recipient country. Similarly, Azam and Delacroix (2006) and Azam and Thelen (2008) look directly at the effects of aid on some potential objectives of the donors while taking due account of reverse causation. Using such a structural econometric approach, they show that aid is effective at fighting terrorism and that donors allocate aid across countries with a view to pursuing this objective.

Our paper represents a further attempt at identifying a donor objective, by testing whether aid is actually used to reduce migration from poor countries.

3. The Implications of the Aid-Migration Trade-Off

A very simple model is sufficient for capturing the main issues raised by the potential trade-off between aid and migration when rich countries use aid policy to reduce migration inflows. It is most likely that (assuming the aid is effective in the first place) there are some spillovers, insofar as the aid given by one donor might reduce simultaneously migration outflows from the recipient country in the direction of both the donor country and other destinations. This means that some free riding is bound to occur unless donors coordinate their actions. The model discussed next illustrates this point.

The Model

Assume that there are three countries in the world: two donor countries, labeled 1 and 2, whose level of affluence potentially attracts migrants, and a developing country, whose flows of

migrants to each donor country are designated n_1 and n_2 . The donors have the possibility of giving aid to the poor country, with a view to reducing the flow of migrants that they receive from it. Two main mechanisms can explain why aid can have a negative impact on the migration flow. First, aid can help create an improved economic situation in the recipient country by supporting productive investments and creating jobs. Second, aid can provide an inducement to the recipient government to try to deter out-migration, if the assistance is conditional on the adoption of policy measures aimed at reducing outflows. For example, financial incentives can be created in favor of returning migrants, thus reducing the net outflow, other things being equal, or migration-prone groups can be targeted with specific actions. In Mali and Senegal, for example, the Soninke ethnic group is the most migration prone because of the well-established diaspora that they can rely on (Azam and Gubert, 2006). A co-development project has been implemented with French aid money with a view to reducing migration by members of this group by developing attractive programs in their region of origin.

Let a_1 and a_2 denote aid flows from countries 1 and 2, respectively. Assume that the inflow of migrants in donor country 1 is governed by the following function:

$$n_1 = f(a_1, a_2, \theta). \quad (1)$$

We assume that the impacts of the two aid flows on n_1 are negative, reflecting the aid-migration trade-off that we want to analyze. The negative impact of a country's own aid flow is quite plausible for the reasons discussed above, but the cross effect deserves additional comment. If aid has a positive effect on the level of economic activity and the creation of jobs that might reduce the attractiveness of migration for nationals from the developing country, then it cannot be assumed that this will affect only the outflow directed at each donor country separately; there is necessarily some spillover on the outflow to the other country. In the limit, it could be argued that only the total aid flow, $a_1 + a_2$, matters for the outflows of migrants, if the two aid flows have the same impact on the recipient economy. The more general specification embedded in equation (1), however, allows for some finer targeting by donor countries, which might devise policies that mainly affect the migration flow heading in their direction. This could be done, for example, by targeting a specific ethnic group that is connected to an important diaspora in one of the donor countries.

The parameter θ captures the set of the other variables that are liable in either country to affect the outflow of migrants. By permuting the subscripts 1 and 2, we can readily generate the equivalent function to equation (1) for donor country 2.

Assume then that country 1 is prepared to incur the cost of providing aid if it shows some effectiveness in reducing the migration flow in its direction. This is captured by assuming that country 1 seeks to minimize the following loss function:

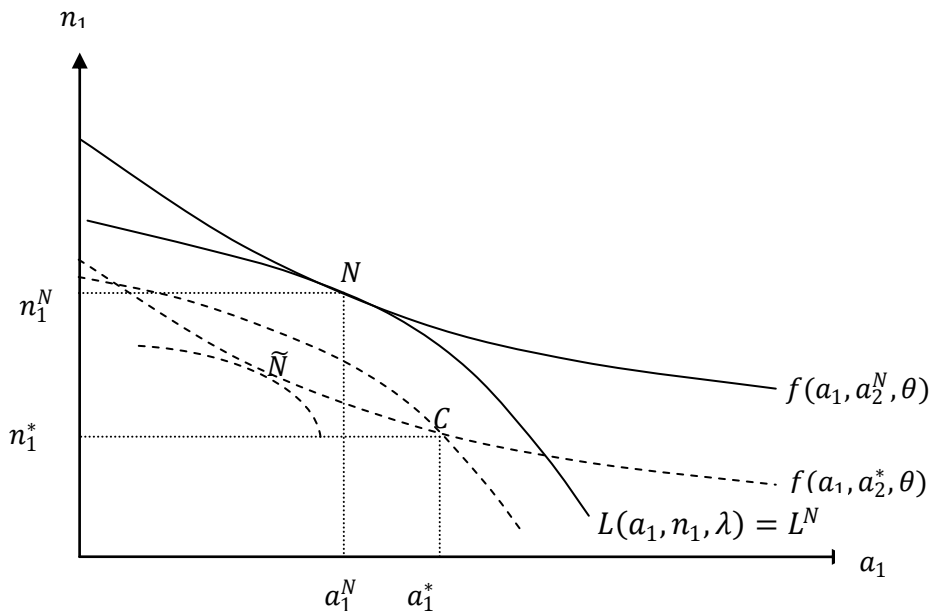
$$\min_{a_1, n_1} L(a_1, n_1, \lambda), \quad (2)$$

which is increasing and convex in its first two arguments. This captures the facts that aid entails a cost for the donating country, by using up some fiscal revenues, and that, for whatever reason, that country's government tends to feel that its country is attracting too many migrants. The shift parameter λ captures the contextual variables that are liable to affect the government's feelings about immigration, such as elections or other political determinants. A similar function is assumed to govern the choices made by country 2.

Nash-Equilibrium Aid and Migration Flows

If the two countries determine their aid policies without any coordination between them, the aid flows and the migration flows will be determined by the Nash equilibrium of the game, where each player takes the other player's strategy as given.

Figure 1: Nash-Equilibrium and Optimum Aid Flows



Source: Authors' elaboration.

Figure 1 describes how country 1 determines its best-response function, $a_1(a_2, \theta, \lambda)$, by minimizing equation (2), subject to the trade-off embedded in equation (1), while taking a_2 , θ , and λ as given. The convex curve $f(a_1, a_2^N, \theta)$ represents the aid-migration trade-off (equation

1), when the aid flow chosen by donor 2 is at its Nash-equilibrium value, a_2^N . The assumed convexity of the curve captures the idea that aid has a decreasing marginal impact on the inflow of migrants, so that even a very high aid flow would not reduce their number to zero. Then, donor 1 will choose its best-response aid flow, a_1^N , at the point where an indifference curve for the loss function (2), represented by the concave curve $L(a_1, n_1, \lambda) = L^N$ is tangent to the aid-migration trade-off. The resulting point, labeled N in figure 1, is the Nash-equilibrium joint choice of aid flow a_1^N and migration inflow n_1^N made by country 1, given the equilibrium aid flow a_2^N chosen by country 2. The Nash equilibrium value of the loss function is equal to L^N for country 1. A similar diagram could obviously be drawn for country 2.

The case for Coordinating Aid

One can easily see that this Nash-equilibrium is inefficient from the point of view of the donor countries. Too little aid is being donated in equilibrium because of a free-rider problem. The spillover effects of aid on migration analyzed above are likely to dilute the incentives of each donor to extend aid in order to reduce immigration. In the Nash equilibrium, each player takes the equilibrium choice of the other as given. The two players, however, could improve on this outcome by coordinating their aid decisions in order to take the spillover effects into account. The intuition for this result can be grasped by looking at the dashed lines in figure 1. Point C represents such a coordinated equilibrium outcome. Notice that if donor 2 increases its aid flow from a_2^N to a_2^* , the aid-migration trade-off facing donor country 1 moves downward, to $f(a_1, a_2^*, \theta)$. This downward shift reflects the spillover effect of country 2's aid flow in reducing the inflow of migrants into country 1, for each level of a_1 . In the coordinated equilibrium, donor 1 will reciprocate the increased aid given by donor 2 at a point such as C , where $a_1^* > a_1^N$. Point C is located on a lower indifference curve than point N —thus corresponding to a loss function value lower than L^N —and so donor 1 is better off in this coordinated equilibrium point than in the Nash equilibrium. This occurs even though donor 1 spends more money on aid, because it receives a lower inflow of migrants in return. A similar diagram could obviously be drawn for donor country 2.

Figure 1 also suggests that such a coordinated equilibrium requires an ability by the players to commit irreversibly to the coordinated aid levels a_1^* and a_2^* in order to avoid the temptation to renege ex post. Once player 2 has engaged a_2^* so that the aid-migration trade-off has shifted downward to the dashed line $f(a_1, a_2^*, \theta)$, player 1 is tempted to reduce its own contribution by moving leftward along the trade-off in order to reach an even lower indifference curve of its

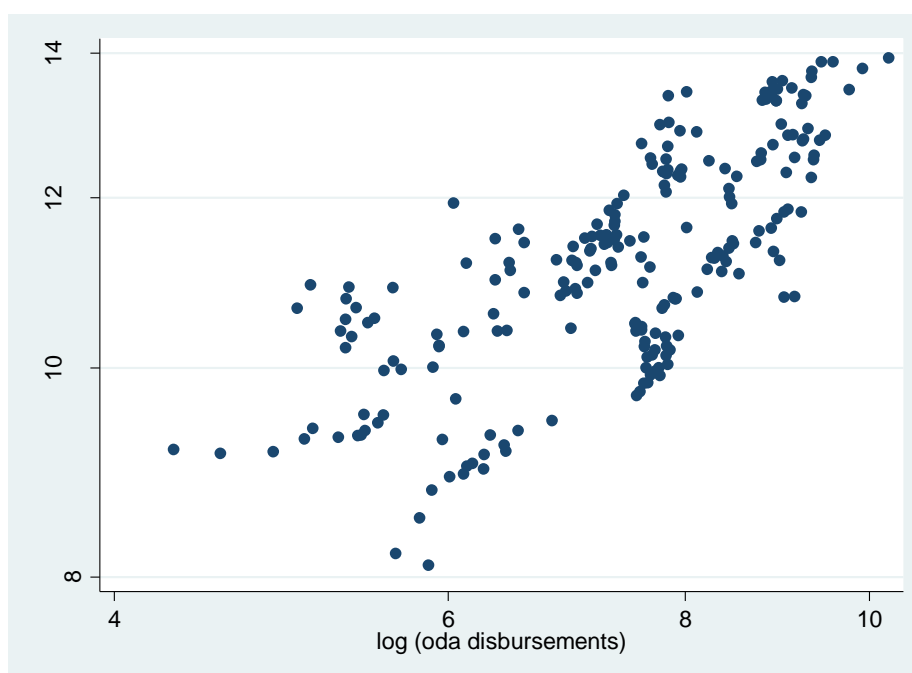
loss function—to a point such as \tilde{N} , where the indifference curve is tangent to $f(a_1, a_2^*, \theta)$. Anticipating this, player 2 might then be deterred from increasing its own aid flow in the first place. Both donor countries need to have a credible way of tying their own hands if a coordinated outcome is to come about. As a matter of fact, we can observe in the real world that the donor community is expending considerable effort to make its pledged contributions credible, using methods ranging from the international definition of the Millennium Development Goals to the creation of powerful aid-dependent constituencies in their own countries (perhaps by tying aid to the advantage of some powerful firms or by creating an overstuffed aid administration). Nevertheless, unless we are prepared to assume that donor countries are coordinating perfectly their aid policies regarding the reduction of migration inflows, this free-riding problem suggests that the aid flows that we observe in the real world are probably below their optimal values.

The foregoing short theoretical analysis of the implications of the aid-migration trade-off rests heavily on the assumptions that such a trade-off does exist in the real world and that there are some spillovers such that the aid given by one country is likely to affect the inflow of migrants entering another country. The empirical exercises offered in the next section aim at testing whether these two assumptions are supported by the data.

4. Empirical Results

A quick look at figure 2 does not seem very promising for the aid-migration trade-off hypothesis. This figure traces the yearly flow of immigrants into, and the total ODA disbursements by, the Development Assistance Committee members between 1995 and 2005. There appears to be a positive correlation between the number of immigrants coming to a donor country and the amount of foreign aid that the latter disburses. The following section shows that this first impression is misleading.

Figure 2: Disbursements of Official Development Assistance (ODA) and Entry of Immigrants in some OECD Countries



Source: Author's elaboration based on data from OECD.Stat.

Search for a Structural Equation

The positive correlation shown in figure 2 does not represent any meaningful behavioral relationship between aid and migration because it fails to control for many relevant variables. Nevertheless, Berthélemy et al. (2009) find a similar positive relationship between the two in an equation that controls for numerous variables. They cautiously explain it by referring to “policy coherence,” arguing that donor countries are actively combining their aid and migration policies. Our results outlined below suggest instead that these authors face a specification problem. The model presented above implies that aid disbursements and migration inflows are jointly determined in equilibrium, as Berthélemy et al. (2009)’s analysis suggests, but with different predictions.

By changing the other determinants of the migration inflow that we have captured by the parameter θ , we can generate some comparative-static predictions that are compatible with figure 2. Imagine that such an exogenous change shifts the aid-migration trade-off upward. Then it is most likely that the equilibrium points N or C will move to the northeast, that is, upward and to the right, indicating that both the aid disbursed and the migration inflow increase simultaneously. The reason for such shifts is that if more migrants are forthcoming for a given aid flow, the donor country will respond both by increasing its aid flows somewhat and by allowing a bit more migration because the marginal impact of aid on migration is decreasing. The

latter effect entails an increase in the marginal cost of reducing immigration through increased foreign aid. This mental experiment suggests two things that a correct empirical analysis should take into account: (a) it is crucial to include the correct control variables in the migration equation in order to identify correctly the aid-migration trade-off, and (b) the aid flow itself is probably endogenous and this should also be controlled for. As most econometric methods for controlling for endogeneity entail a potential loss of efficiency, we first present the results without taking this problem into account. We then test whether this estimation procedure gives rise to a significant endogeneity bias in a second stage. This two-step approach allows us to perform two tests of interest with one equation—that is, to test (a) whether aid has a significant negative impact on the inflow of migrants, and (b) whether donors are actively using foreign aid as a policy response aimed at reducing the migration inflows that they face.

To test our predictions, we use data on yearly immigration flows into, and on aid disbursements by, the Development Assistance Committee members of the OECD between 1995 and 2005 taken from OECD.Stat. The immigration flows we consider are legal entries of migrants from low-income and lower-middle-income countries. The restriction to low income origin countries is meant to capture the idea that donor countries are not viewing the inflows of migrants from other rich countries in the same way as they do inflows from poorer countries². The aid variables we consider are net ODA disbursements and multilateral aid disbursements in constant US dollars.

As control variables, we use the GDP per capita (in constant US dollars) and unemployment rates in these destination countries, taken from the 2006 World Development Indicators. We also control for the stock of foreign population and the social expenditures as a percentage of GDP, taken from OECD.Stat.

Our empirical specification is:

$$m_{it} = \alpha_0 + \alpha_1 s_{it-1} + \alpha_2 GDP_{it-1} + \alpha_3 u_{it-1} + \alpha_4 se_{it-1} + \alpha_5 aid_{it-1},$$

where m_{it} is the flow of immigrants in country i at date t (in *Log*), s_{it-1} is the stock of immigrants (in *Log*), GDP_{it-1} is the GDP per capita (in *Log*), u_{it-1} is the unemployment rate, se_{it-1} is the percentage of social expenditures in the GDP and aid_{it-1} is total aid disbursed by country i at date $t - 1$ (in *Log*). All explanatory variables are lagged once in order to mitigate endogeneity problems that might affect the control variables and to account for potential time lags in the response of migration flows to changes in incentives.

² In the appendix we present some robustness checks where the inflows of immigrants from upper-middle-income countries and high-income countries are also included in the immigration flows variable.

We estimate this equation using country fixed effects. This estimation method allows us to control for unobserved country-specific effects which are time invariant, such as the immigration policies which were constant over our sample period. Moreover, it may provide some information on the determinants of the total number of migrants, which the aid-migration trade-off is likely to govern, while we only have data on legal entries. The following argument explains why.

Assume that the number of legal migrants is a random fraction of their total number, which reflects, among other things, the immigration-restriction policy enforced by the destination country. Then, because we are working with the logarithm of the number of legal migrants, the mean value of that random fraction feeds into the country-fixed effect, while the deviations relative to that mean are feeding into the residuals. Formally, if n_L is the number of legal migrants and n is the total number of migrants, we can assume that:

$$n_L = \phi(G, \varepsilon)n, \quad (3)$$

where G is a set of variables that captures the immigration-restriction policy stance of the government and $0 \leq \phi(G, \varepsilon) \leq 1$ is the random share of legal migrants, depending on the exogenous shock variable ε . Then, by taking the logarithm of equation (3), we get

$$\text{Log } n_L = \text{Log } \phi(G, \varepsilon) + \text{Log } n. \quad (4)$$

Therefore, unless the restriction policy pursued by each government has changed drastically over our relatively short sample period, it should be well controlled for by the country-fixed effects. This assumes that, with respect to immigration-restriction policy, there is more variation across countries than within each country over time. Then our equations explaining the logarithm of the number of legal migrants should, in fact, tell us a great deal about the total number of migrants entering each country.

Table 1 presents the regression results. In columns (1) and (3), we do not control for endogeneity of foreign aid; that is done in columns (2) and (4). The method used for performing this control is based on the Hausman test and is further discussed below.

Table 1: Regression Results on Flows of Legal Migrants from Low-Income and Lower-Middle-Income Countries

Variable	(1)	(2)	(3)	(4)
Unemployment rate	-0.30*** (0.09)	-0.18*** (0.08)	-0.30*** (0.09)	-0.14** (0.08)
Social expenditures (percent of GDP)	0.32*** (0.09)	0.30*** (0.09)	0.32*** (0.09)	0.34*** (0.10)
Log of per capita GDP	0.54 (1.42)	9.53*** (2.82)	0.54 (1.42)	14.80*** (4.97)
Log of stock of foreign population	0.19 (0.57)	0.57 (0.50)	0.17 (0.59)	0.91* (0.47)
Log of official development assistance (ODA) disbursements	0.46 (0.32)	-3.68*** (1.15)	0.43 (0.28)	-5.15*** (1.66)
Log of multilateral disbursements			0.10 (0.27)	-1.43 (0.90)
Endogeneity bias, ODA		4.47*** (1.26)		5.90*** (1.73)
Endogeneity bias, multilateral disbursements				1.50 (0.96)
Number of observations	118	117	118	116
F-test	9.50	9.84	7.87	7.64

*:significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Numbers in parentheses are robust standard errors.

The unemployment rate is highly significant, reflecting the deterrent effect of a depressed labor market in the host country. When the probability of finding a job is low in the destination country, migrants seem to postpone their travel or even to cancel it. The social expenditures policy pursued by the target country is an important attraction factor, and it is significant in all the columns. Countries that spend more on social items such as health and education are obviously more attractive to migrants than countries with a more conservative policy stance. Then, we find a strange result for per capita GDP in columns (1) and (3), where it seems to have a negligible impact on the inflow of migrants. This counterintuitive result suggests the presence of an estimation problem. Fortunately, this effect is not robust to the correction of the aid

endogeneity bias, as this coefficient becomes positive and significant in columns (2) and (4). It thus seems that the impacts of the business cycle and national income on immigration are well captured by the unemployment rate and GDP per capita.

Finally, the existing stock of foreign population already residing in the country of destination is only significant at the 10 percent level in equation (4). This variable is meant to reflect the network effects that play a key role in the migration process, as has been shown by many studies. For example, Azam and Gubert (2006) demonstrate that such an effect can explain an ethnic bias in migration. They show that two ethnic groups living in the same region of the Senegal River valley, in western Mali, and thus facing the same economic conditions, have very different migration patterns. The authors use historical evidence to document that the group with a long history of out-migration is sending a much higher fraction of its population abroad than the group without such a migration history. The established diaspora from the first group serves as a bridgehead that reduces the costs of migration for the prospective new migrants from that same group by helping them find jobs and accommodations and by providing the informal credit and insurance services that migrants' networks are known for delivering to their members. Our findings reported above suggest that such an effect is not very strong at the country level, once the impact of foreign aid is taken into account. The stock of foreign population in the destination country is probably too coarse a measure to capture this effect.

Testing for the Impact of Aid

To gain some insight into the relative effectiveness of various aid flows, we use the log of official development assistance (ODA) disbursements by the destination country and test whether multilateral aid disbursements have a differential impact by introducing that variable in addition to ODA. Arguably, the multilateral aid variable captures a much better coordinated aid policy than ODA, which includes considerable bilateral aid. This interpretation reflects the idea that the principal donors have a say in the way the World Bank and other multilateral donor agencies determine multilateral aid disbursements and that they also have a clear opportunity to coordinate their decisions regarding these disbursements at board meetings or in the corridors. The model presented above suggests that coordinated aid flows could have some multiplier effects, as they imply a quid pro quo by other donors. It turns out that ODA disbursements represent the most significant aid variable coming out of our regressions (2) and (4), with the predicted negative sign. This is consistent with our theoretical framework, which suggests that foreign aid is probably an effective tool for reducing the inflow of migrants into rich countries.

The model, however, also raises the question whether coordinated aid is a more powerful tool against immigration than uncoordinated aid. Total ODA, which includes both bilateral aid and the contributions channeled through the Bretton Woods entities and other multilateral institutions, could be less effective than multilateral aid taken separately. Our findings, however, do not support the differential impact hypothesis. This suggests that in fact donor countries somehow manage to coordinate their bilateral and multilateral aid flows equally well.

The technique applied in columns (2) and (4) for controlling for aid endogeneity is derived from the standard Hausman test. Two auxiliary reduced-form equations are estimated for log of ODA and log of multilateral aid, which are assumed endogenous in our theoretical framework. The instruments used for ODA and multilateral disbursements are the log of public expenditures on order and security, taken from OECD.Stat and the percentage of right-wing members in parliament, taken from two websites³. The log of government revenues, taken from OECD.Stat is added as an additional instrument for the estimated equation (4). These instruments are regarded as the contextual variables captured by λ in equation (2) of the theoretical model. The estimations of the reduced form equations are presented in appendix table B1. ODA is significantly correlated to the public expenditures on order and security and multilateral aid is significantly correlated to the percentage of right wing in parliament. The residuals from these equations are then included, in addition to the aid variables themselves, in columns (2) and (4), and their estimated coefficients provide estimates of the endogeneity biases for each variable. Inclusion of these residuals in the equations provides an additional benefit, as it corrects the estimated coefficients of the aid variables themselves for the endogeneity bias that affects them in the uncontrolled equation. For the tests performed at columns (2) and (4), the residuals are obviously lagged. The corresponding estimates of the endogeneity biases are presented in table 1 under that entry.

In column (2), where ODA only is included, we find that it is strongly significant, and the exogeneity assumption is rejected at the 1 percent level. The correct interpretation of this test as an endogeneity test is not immediate. The specification of the immigration function in columns (1) through (4) assumes that the inflow of migrants responds to incentives with a one-year lag. The endogeneity test performed in columns (2) and (4) assumes that the government in the donor country adjusts its aid flow in year $t - 1$ on the basis of its forecast that a component of the random shock will affect the immigration flow in year t ; this forecast is presumed to be based on some information that is not available to the econometrician. For example, the government

³ <http://www.parties-and-elections.de>
<http://perspective.usherbrooke.ca/bilan/BMEncyclopedie/BMEncycloListePays.jsp>.

may be using a lead indicator based on the number of visa applications in year $t - 1$ that will only show up as actual migration in the subsequent year, and this is a piece of information that we have not been able to include in our estimated equations. Similarly, the government of the host country might be aware of sociological or institutional changes affecting a resident diaspora that are likely to affect the latter's ability to attract new migrants, but this is something the econometrician does not know. The reduced-form equation for aid reflects in its residuals this anticipation by the government in year $t - 1$. The latter is then necessarily correlated with the random shock occurring in year t , by construction, if our behavioral assumption correctly captures the way the donor government is forming its expectations.

The two aid variables are included in column (4). Only ODA is found to be significant and endogenous. Hence, ODA might not be worse than multilateral aid after all, suggesting that donors have found various methods for obtaining the required coordination for their other aid flows. After all, many of them have been in this line of business for about six decades, so that the aid game might safely be approximated by an infinite-horizon repeated game. It is known that this kind of setting is likely to foster cooperation between the players. Our findings thus suggest that donor countries are doing a good job of equalizing the marginal impact of each kind of aid flow, so that aggregation of flows into a single ODA variable is legitimate for econometric purposes.

Some robustness checks are presented in the appendix. In tables C1 and C2, we include immigrants from upper-middle-income countries and high income countries in the immigration flows variable. As these immigrants come from countries which are not important aid recipients, we expect the ODA variable to be less significant in these regressions and this is what we observe. In table C3, we add the income tax as an additional regressor. The income tax variable is significant only when immigrants from high-income countries are included in the immigration flows. It has no effect on immigration flows from low income and lower-income countries, and the significant negative sign of ODA remains.

In the foregoing econometric exercise, two key results seem robust: (a) foreign aid has a significant negative impact on migration inflows into donor countries, and (b) donors are actively using aid as a policy tool for reducing immigration. The third result that we tested, concerning the effectiveness of aid flows coordinated through multilateral institutions in relation to that of other aid flows, leads us to reject the view that bilateral aid is less effective.

5. Conclusion

This paper has investigated the assumption that donor countries employ foreign aid partly as a tool for controlling inflows of migrants. A brief theoretical analysis was used to bring out the main predictions that can be derived from such an assumption. The model helped us identify the potential free-rider problem raised by the assumption and suggested that donors must find a coordinated equilibrium if they want to optimize the impact of their aid as a means of reducing immigration. Such a coordinated equilibrium requires donors to find a way of tying their own hands in order to make their commitment not to renege *ex post* on their pledged disbursements credible. We suggested that in the real world donors are in fact using various mechanisms to create this credible commitment, ranging from the international definition of the Millennium Development Goals to the formation of powerful aid-dependent constituencies in their own countries. Techniques for developing the latter in the real world include, among other methods, the tying of aid to benefit powerful firms and the creation of an overstuffed aid administration. In addition, donors have created international aid institutions, such as the World Bank, whose job is precisely to coordinate at least some of the aid flows.

The empirical tests performed using a panel of data on DAC member countries between 1995 and 2005 show that our assumed aid-migration trade-off is indeed supported by the data. The empirical approach used to produce these findings is based on two requirements brought out by the theoretical analysis. First, it is important to include in the estimations various control variables, which are likely to affect both immigration flows and aid disbursement flows. Second, due account must be taken of the fact that governments choose jointly the level of foreign aid that they deliver and the in-migration that they permit, so that the former must be regarded as endogenous in the econometric analysis. Our empirical analysis provides support for these two predictions. We further tested whether the amount of aid disbursed through a coordination mechanism, which we have proxied by multilateral aid disbursements, is any more effective than the other aid flows, here captured by ODA disbursements. Our results suggest that total ODA is not performing any worse than its multilateral aid component, but this might reflect econometric problems, as these two variables are strongly correlated with one another. Our econometric exercises fail to support the view that there is a significant free-rider problem with bilateral aid flows and hence that there is significant underprovision of aid. Nevertheless, our tests of this assumption do not seem very powerful, and further investigation of this issue is warranted. In particular, a finer disaggregation of aid flows might be required in order to perform a convincing analysis of the free-rider problem. This points the way for future research.

Appendix

A. Some Descriptive Statistics

Table A1 : Average yearly immigrant flows over the period 1995-2005

Country	Migrants from low-income countries	Migrants from lower-middle- income countries	Migrants from upper-middle- income countries	Migrants from all countries
Australia	9560,0	9437,6	12222,6	119910,1
Austria		5719,6	34078,8	84060,1
Belgium	2120,4	7942,1	6725,8	61354,1
Canada	43294,9	29226,1	15276,2	222336,3
Denmark	2857,0	3532,5	2508,7	22738,8
Finland	354,1	998,9	2550,2	9373,8
France	15451,3	46071,3	13596,3	99840,6
Germany	4742,8	49960,2	267771,0	651513,6
Greece	886,0	10727,0	13046,0	38151,0
Ireland				29118,2
Italy	19880,7	95515,0	64613,7	265120,5
Japan	4296,2	81037,9	34541,3	310583,1
Luxembourg				10994,2
Netherlands	3230,6	10174,5	9416,4	77778,4
New Zealand	5166,9	6705,4	4806,8	42064,5
Norway	2418,5	4146,5	3449,6	25879,3
Portugal	3017,7	12724,4	9658,8	32934,0
Spain	13836,1	134405,8	102570,5	385301,3
Sweden	2617,6	9314,8	4342,3	40938,9
Switzerland			8613,0	86560,8
UK	28826,1	13297,6	27894,9	266335,7
USA	133382,2	239054,4	202154,0	861356,1

Table A2: Average yearly ODA disbursements over the period 1995-2005 (constant USD, millions)

Country	ODA to low-income countries	ODA to lower-middle-income countries	ODA to upper-middle-income countries
Australia	253,9	319,3	27,7
Austria	91,8	264,1	28,4
Belgium	354,3	151,0	21,7
Canada	444,1	413,6	52,7
Denmark	529,2	168,5	49,5
Finland	96,9	91,7	4,9
France	1562,9	1355,0	385,4
Germany	1094,2	1769,3	165,9
Greece	8,7	108,0	5,3
Ireland	185,2	21,7	12,2
Italy	475,0	291,1	2,9
Japan	1079,3	3662,8	153,8
Luxembourg	56,9	38,4	6,1
Netherlands	978,7	699,6	86,1
New Zealand	39,6	41,9	8,3
Norway	660,6	411,0	66,2
Portugal	276,6	11,1	1,1
Spain	189,4	673,3	76,8
Sweden	485,7	307,4	56,7
Switzerland	239,8	223,2	21,4
UK	1295,7	681,2	184,5
USA	2096,0	4455,6	194,2

Table A3: Average values of the control variables over the period 1995-2005

Country	Unemployment rate	GDP per capita (constant USD)	Social expenditures as a percentage of GDP	Stock of foreign population	Income tax (%)
Australia	6,9	27226,3	17,3	4482000,0	24,4
Austria	4,3	28316,0	25,8	720293,3	10,2
Belgium	8,4	26909,3	26,1	882183,5	27,4
Canada	7,9	27607,4	17,7	4971000,0	20,3
Denmark	5,2	28083,2	27,2	256850,0	33,4
Finland	10,7	24978,1	23,6	92566,2	26,8
France	10,1	24642,6	28,3	3252602,0	12,3
Germany	8,5	25333,4	26,9	7208836,0	20,8
Greece	10,4	18710,1	20,8	402790,0	1,5
Ireland	6,7	27487,4	14,8	153692,9	16,5
Italy	9,8	24997,5	22,8	1527383,0	18,8
Japan	4,4	25615,9	15,6	1685760,0	6,4
Luxembourg	3,1	51289,2	21,9	161492,7	11,3
Netherlands	4,1	28302,5	20,6	686212,9	7,1
New Zealand	5,6	21047,1	19,0		20,8
Norway	4,1	35603,5	23,6	184388,5	21,4
Portugal	5,9	16356,3	20,1	293014,5	6,4
Spain	13,1	20771,4	20,7	1169233,0	12,9
Sweden	6,9	27117,3	30,6	493823,5	26,2
Switzerland	3,6	30815,4	18,8	1404938,0	10,2
UK	5,9	25316,6	19,7	2410000,0	16,4
USA	5,1	33680,1	15,2	18300000,0	17,5

Table A4: Average values of the instruments over the period 1995-2005

Country	Public expenditures on order and security (USD millions)	Right wing members in parliament (%)	Government revenue(USD millions)
Australia	3761,2	47,7	170432,8
Austria	3576,9	55,3	116387,5
Belgium	5058,0	62,3	137999,6
Canada	11816,1	75,7	320512,9
Denmark	1892,6	50,1	107021,6
Finland	3656,5	24,6	77051,5
France	22367,9	37,5	801067,1
Germany	34272,9	46,7	1033239,0
Greece	1531,0	43,1	70809,5
Ireland	3659,5	69,8	41352,7
Italy	26293,3	53,9	593221,6
Japan	55338,5	66,1	1354059,0
Luxembourg	748,6	61,1	10259,4
Netherlands	7339,0	51,4	208564,0
New Zealand	1632,0	47,5	29425,0
Norway	2039,7	43,3	106028,0
Portugal	3383,3	44,6	54190,8
Spain	12654,2	46,9	277408,6
Sweden	3802,0	28,9	160240,7
Switzerland	24786,2	68,6	101396,5
UK	46211,9	52,4	631277,3
United States	556997,2	48,6	3283873,0

B. First-stage reduced form equations

Table B1: First-stage reduced form equations for Table 1 regressions

Explanatory variables	Dependent variable: <i>Log</i> ODA Disbursements for eq.(2)	Dependent variable: <i>Log</i> ODA Disbursements for eq.(4)	Dependent variable: <i>Log</i> Multilateral Disbursements
<i>Log</i> Public Exp. on order and security	0.21*** (0.07)	0.21*** (0.08)	0.09 (0.11)
Percentage Right Wing in Parliament	-0.003 (0.002)	-0.002 (0.002)	0.01*** (0.003)
<i>Log</i> Government Revenues	-	-0.06 (0.14)	-0.33* (0.19)
Unemployment rate	0.03 (0.02)	0.03 (0.02)	-0.01 (0.02)
Social expenditures (%)	-0.009 (0.013)	-0.01 (0.01)	0.02 (0.02)
<i>Log</i> Per capita GDP	1.87*** (0.36)	1.95*** (0.38)	1.10*** (0.42)
<i>Log</i> Stock foreign population	0.04 (0.08)	0.05 (0.09)	0.23** (0.59)
Nb. Obs.	159	156	156
<i>F</i> -test	48.59	39.86	17.31

*: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Numbers in parentheses are robust standard errors.

Table B2: First stage reduced form equation for Table C3 regressions:

Explanatory variables	Dependent variable : <i>Log</i> ODA disbursements
<i>Log</i> Public expenditures on order and security	0.19*** (0.07)
Percentage of Right Wing in Parliament	-0.002 (0.002)
Unemployment	0.03 (0.02)
Social expenditures	-0.01 (0.01)
<i>Log</i> Per capita GDP	1.60*** (0.40)
<i>Log</i> Stock of Foreign Population	0.04 (0.08)
Income Tax	-0.02*** (0.008)
N Obs	159
F statistic	54.92

*: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Numbers in parentheses are robust standard errors.

C. Some Robustness Checks

Table C1: Immigrants from upper-middle-income countries and high-income countries included in the dependent variable; ODA only.

Explanatory variables	Dependent variable: <i>Log</i> Inflows from LIC, LMIC and UMIC		Dependent variable: <i>Log</i> Inflows from all countries	
Unemployment rate	-0.22*** (0.07)	-0.30*** (0.08)	-0.12*** (0.04)	-0.17*** (0.05)
Social Expenditures (%)	0.28*** (0.08)	0.26*** (0.08)	0.11** (0.05)	0.12** (0.05)
<i>Log</i> Per Capita GDP	6.89*** (2.58)	0.30 (1.17)	2.43 (1.81)	-0.83 (0.88)
<i>Log</i> Stock Foreign Population	0.71 (0.48)	0.61 (0.53)	0.93** (0.37)	0.79** (0.40)
<i>Log</i> ODA Disbursements	-2.39** (1.06)	0.33 (0.27)	-1.26* (0.66)	0.21 (0.21)
Endogeneity Bias ODA	2.93** (1.12)		1.55** (0.71)	
N Obs	125	135	146	156
F Statistic	14.43	13.52	7.70	8.97

*: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Numbers in parentheses are robust standard errors.

LIC: low-income countries; LMIC: lower-middle income countries; UMIC: upper-middle income countries.

Table C2: Immigrants from upper-middle-income countries and high-income countries included in the dependent variable; ODA and multilateral aid.

Explanatory variables	Dependent variable: <i>Log</i> Inflows from LIC, LMIC, UMIC		Dependent variable: <i>Log</i> Inflows from all countries	
	Unemployment rate	-0.18** (0.07)	-0.29*** (0.08)	-0.16*** (0.04)
Social Expenditures (%)	0.31*** (0.09)	0.26*** (0.08)	0.12*** (0.05)	0.11** (0.05)
<i>Log</i> Per Capita GDP	11.54** (4.54)	0.30 (1.17)	-0.82 (0.88)	1.37 (2.96)
<i>Log</i> Stock Foreign Population	1.02** (0.44)	0.59 (0.54)	0.78* (0.41)	0.84** (0.38)
<i>Log</i> ODA Disbursements	-3.66** (1.53)	0.28 (0.23)	0.16 (0.19)	-0.93 (0.91)
<i>Log</i> Multilateral Aid Disbursements	-1.31 (0.85)	0.12 (0.23)	0.10 (0.15)	0.28 (0.59)
Endogeneity Bias ODA	4.19*** (1.57)			1.20 (0.94)
Endogeneity Bias Multilateral Aid	1.37 (0.89)			-0.21 (0.61)
N Obs	124	135	156	145
F Statistic	11.20	11.16	7.69	7.04

*: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Numbers in parentheses are robust standard errors.

LIC: low-income countries; LMIC: lower-middle income countries; UMIC: upper-middle income countries.

Table C3: Income tax included as an additional regressor

Explanatory variables	Dependent variable : <i>Log</i> Inflows LIC, LMIC		Dependent variable : <i>Log</i> Inflows LIC, LMIC and UMIC		Dependent variable : <i>Log</i> Inflows from all countries	
Unemployment rate	-0.17** (0.07)	-0.30*** (0.08)	-0.21*** (0.07)	-0.29*** (0.08)	-0.12*** (0.04)	-0.17*** (0.04)
Social expenditures (%)	0.27*** (0.08)	0.30*** (0.09)	0.26*** (0.07)	0.24*** (0.08)	0.12*** (0.04)	0.13*** (0.04)
<i>Log</i> Per Capita GDP	9.31*** (2.67)	0.89 (1.36)	6.70*** (2.43)	0.61 (1.12)	2.82* (1.67)	-0.06 (0.78)
<i>Log</i> Stock Foreign Population	0.74 (0.47)	0.32 (0.55)	0.86* (0.45)	0.75 (0.50)	1.00*** (0.35)	0.86** (0.37)
Income tax	-0.02 (0.04)	0.10** (0.04)	0.02 (0.04)	0.10*** (0.03)	0.05** (0.03)	0.09*** (0.02)
<i>Log</i> ODA disbursements	-3.88*** (1.22)	0.74** (0.32)	-2.42** (1.12)	0.59** (0.26)	-1.12 (0.71)	0.42** (0.18)
Endogeneity bias ODA	4.93*** (1.36)		3.20*** (1.21)		1.62** (0.78)	
N Obs	117	118	125	135	146	156
F Statistic	9.18	9.09	13.54	13.08	10.46	11.75

*: significant at the 10% level; **: significant at the 5% level; ***: significant at the 1% level. Numbers in parentheses are robust standard errors.

LIC: low-income countries; LMIC: lower-middle income countries; UMIC: upper-middle income countries.

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