



Does rural development aid reduce international migration? ☆

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ARTICLE INFO

Article history:

Accepted 30 May 2018

Available online 8 June 2018

Keywords:

Foreign aid
Migration
Rural development
Urbanization
Push factors

ABSTRACT

In recent years, interest has emerged in policy circles and among academics about the use of foreign aid to reduce international migration. Scholars have investigated this aid-migration nexus, but results have been mixed and questions remain. This paper contributes to the literature by comparing the effects of rural and urban development aid on international migration. Specifically, we hypothesize that while increases in rural development aid to developing countries reduce emigration from those countries, greater urban aid produces the opposite effect – higher rates of emigration. These hypotheses are informed by two theoretical mechanisms. The first mechanism focuses on the divergent preferences of rural and urban populations regarding emigration. Aid targeting these respective populations provides each with resources to follow through on their migratory ambitions, or lack thereof. The second mechanism focuses on contrasting impacts of rural and urban aid on agricultural sector development and the effects of this sort of development on emigration. We analyze cross-national time series data to test our hypotheses regarding rural and urban development aid, finding that countries that receive larger amounts of rural development aid have lower emigration rates. Then we turn to survey data from the Arab Barometer to assess whether the attitudes of survey respondents match our theorized mechanisms. Results from survey data suggest that investments in agricultural sector capacity building will lead to reductions in emigration from developing countries; however, these findings do not indicate that rural and urban populations differ in terms of their desire to emigrate.

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1. Introduction

In recent years, there has been a wave of interest in policy circles and among academics in the utilization of foreign aid as a tool to reduce international migration. This approach hinges on the notion that foreign aid improves living standards in developing countries and, in doing so, lowers the incentives of those countries' populations to emigrate. Advocates of aid-based immigration policy argue that this approach is more effective than creating barriers to entry, because it addresses root causes of emigration such as poverty and underdevelopment. Governments in advanced industrialized countries facing migrant and refugee crises are intrigued by the prospects of deterring migration while simultaneously fostering development and creating goodwill in the neighboring countries from which migrants flow.

Despite interest in this approach, there remains great uncertainty as to if, or under what circumstances, aid deters migration. Some scholars have argued that aid will not deter migration at all and that it may actually enable would-be migrants (de Haas, 2007; Clemens, 2014), whereas others have found evidence that aid reduces migrant outflows from source countries (Gamso & Yuldashev, 2017; Lanati & Thiele, 2017). We believe that inconsistency in regard to the effects of aid on migration is partly a function of the aggregate measures of foreign aid that are typically employed in the literature. After all, aid projects differ in terms of their objectives (Clemens, Radelet, Bhavnani, & Bazzi, 2012), their effects (Mavrotas & Nunnenkamp, 2007; Savun & Tirone, 2017), and the mechanisms through which they impact outcomes (Jones & Tarp, 2016).

In this paper, we consider the potentially contrasting impacts of aid directed towards urban and rural development. In particular, we hypothesize that aid targeting rural development will reduce emigration from aid recipient countries, while aid targeting urban areas will increase emigration rates. These hypotheses are informed by two proposed theoretical mechanisms, one centering on the preferences of rural and urban populations, and the other on

☆ This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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the effects of rural and urban aid on labor markets in recipient countries.

The first theoretical mechanism focuses on the contrasting preferences of rural and urban populations regarding international migration. We posit that, all else equal, rural dwellers have less interest in migrating abroad than their urban counterparts. Urbanites are more likely to wish to emigrate abroad, as their relatively extensive networks, skills, and information regarding opportunities abroad make emigration attractive (Karizhnaya, 2013; Kim, 2014; Hernandez-Leon, 2008; Fussell, 2004). Rural populations may still emigrate, if they lack sufficient economic opportunities in their rural areas of residence, but they have relatively little interest in leaving their homes if not under economic pressure to do so.

Within this context, we expect that aid targeting rural areas will create opportunities and improve living conditions in these areas, thereby deterring residents from seeking alternatives abroad. In contrast, aid targeting urban areas will have an enabling effect, by offering urban populations that wish to exit more economic means to do so. Aid targeting urban areas disproportionately vis-à-vis rural areas may also create pull factors that lead to higher levels of rural-to-urban migration, which should in turn increase the number of urban-dwelling individuals that wish to emigrate abroad and that have the means to do so.

The second theoretical mechanism relates to the contrasting effects that rural and urban aid have on labor markets in rural and urban areas. Specifically, we theorize that rural development aid leads to agricultural sector development and bolsters agricultural production in rural areas. This generates jobs in the rural agricultural sector, as well as economic growth that creates non-farm jobs. These employment effects reduce the perceived benefits of seeking exit, as should the improvements in rural governance that accompany this sort of aid. In contrast, urban aid primarily generates urban development, which encourages urbanization and disrupts rural markets, especially in the presence of persistent urban bias in developing countries (Lipton, 1993; Bezemer & Headey, 2008). These dynamics in turn drive emigration, both from urban and from rural areas.

Hypotheses regarding the effects of rural and urban aid on emigration are the same, regardless of the theoretical mechanism: (1) rural development aid is accompanied by reductions in emigration, whereas (2) urban development aid is accompanied by increases in emigration. We test these hypotheses using data from 103 aid recipient countries, spanning 15 years (1995–2010). We do so using data on foreign assistance from AidData (Tierney et al., 2011) and migration data from the Institute for Employment Research (Brücker, Capuano, & Marfouk, 2013). These datasets allow us to assess the emigration trends that accompany aid projects designed to promote rural and urban development. Results provide partial support for our hypotheses: rural aid is negatively associated with emigration rates, but we find no significant relationship between urban aid and emigration.

Next, we assess our theoretical mechanisms. Analysis of geocoded migration data would be optimal for conducting such assessment. Unfortunately, no such data exist so we instead turn to survey data from the Arab Barometer. This survey data allows us to establish whether the attitudes of respondents match one or both of our theoretical mechanisms. The Arab Barometer asks respondents whether they think about emigrating from their country, as well as whether they reside in rural or urban areas and what line of work they are in (agriculture or other), among other things. Analysis of this data suggests that the attitudes of urbanites regarding emigration do not differ from those of their rural counterparts, but that agricultural sector workers are significantly less likely to consider emigration than those employed in other sectors. Drawing on these findings, we infer that the effect of rural aid on migration is attributable to the impacts of this aid on labor markets

in rural areas. This finding corresponds to our second mechanism, which highlights the positive impact of rural aid on agricultural sector employment in rural areas.

Our results contribute to the scholarly and policy debates regarding the relationship between foreign aid and international migration. While scholars have generally argued that aid has either an enabling or deterring effect on migration, we theorize that some aid has a deterring effect while other aid has an enabling effect. Our findings support the notion that the effects of aid are not uniform, thereby contributing to a growing literature attesting to the heterogeneous effects of different aid types (Jones & Tarp, 2016; Savun & Tirone, 2017). These results have implications for researchers seeking to understand the aid-migration nexus, as well as policymakers looking for development-friendly policies to control migrant inflows.

2. Background and literature review

Immigration from less developed countries is a perennially salient political issue in the advanced industrialized world. The United States has increased its attention to border security since 2000, under both the Bush and Obama Administrations, in an attempt to stem the flow of immigrants from Central America.¹ Likewise, European countries have used sea route patrols, border fences, and deportations to reduce population inflows from the Middle East and North Africa.² Anxieties about migration remain on both sides of the Atlantic, such that migration control efforts were major centerpieces in the presidential campaign of Donald Trump in the United States (Scribner, 2017) and the Brexit campaign in the United Kingdom (Goodwin & Heath, 2016).

Although border security policies may play well to voters, there is surprisingly little evidence that these policies actually deter migration. Indeed, many scholars have expressed skepticism about the effectiveness of traditional immigration policy efforts (Bhagwati, 2003; Castles, 2004; Black, Collyer, Skeldon, & Waddington, 2006). The failure of traditional policies is likely attributable to their inattention to the root causes that push migrants to exit their countries of residence, such as poverty, inequality, and political repression.

Within this context, alternative strategies that focus on addressing the push factors that compel migrants to uproot their lives and move abroad have come to the forefront in the migration policy debate.³ In particular, foreign aid is increasingly seen as a development friendly tool for reducing migration. Advocates of this approach argue that aid spurs development, thereby assuaging the major push factors that compel individuals to emigrate. Recent policy efforts in Western Europe and in the United States suggest that this strategy has found support among policymakers. For example, the European Commission announced plans in 2016 to use “financial allocations devoted to tackling the root causes” of migration as a means to reduce influxes of migrants from the Middle East and Africa;⁴ likewise, the U.S. government announced in 2016 that it will allocate one billion dollars in aid to Central America to reduce migrant inflows from Mexico and other countries in the region.⁵

Despite the intuitiveness of this aid-based approach to managing migration, there is considerable division among academics. While some have been supportive of the notion that aid deters

¹ The Bush Administration passed several laws to strengthen border enforcement, such as the REAL ID Act of 2005 and the Secure Fence Act of 2006 (Wroe, 2008). Likewise, the Obama Administration increased deportations and further emphasized border security (Martínez & Rosen, 2016).

² de Haas (2010).

³ E.g. Azam and Berlinschi (2010).

⁴ European Commission – Press release (2016).

⁵ US Department of State (2016).

migration (e.g. Morrison, 1982; Böhning, 1994; Stalker, 2002), more recent literature has expressed skepticism (e.g. Clemens, 2014). Some skeptics suggest that aid enables migration by providing individuals who would like to migrate with “capabilities and aspirations” to do so (de Haas, 2010, p. 1305). It has been further suggested that aid may worsen the very conditions in recipient countries that push individuals to seek exit (Castles & Miller, 2003).

The relationship between aid and migration is ultimately an empirical matter, yet studies have been limited and findings contradictory. Rotte and Volger (2000) find no significant effect of aid on migration into Germany. In contrast, Berthélemy, Beuran, and Maurel (2009) find that aid leads to heightened migration and Faini and Venturini (2010) find that short term increases in migration accompanied aid intended to improve living standards in low-income European countries. More recently, Gamso and Yuldashev (2017) find that aid targeted towards governance projects is accompanied by reductions in the emigration rates of aid recipient countries, while economic and social sector aid projects have no significant effect. The latter study offers the insight that aid targeted towards some types of projects may have an enabling effect while aid targeting other sorts of projects may have a deterring effect (although its results only confirm a deterring effect).

The effects of aid on migration may also be conditional on the geographic focus of aid projects, such that projects in rural and urban areas have different impacts on migration patterns. Urban development generated through aid should enable those urbanites who wish to migrate through its positive effects on incomes and on the formation of international networks (Sassen, 1988). Likewise, urban development aid is likely to spur urbanization, which in turn promotes emigration (Hatton & Williamson, 1994; Massey, 1988; Maurel & Tuccio, 2016). Finally, aid-based urban development may increase emigration by rural dwellers through its disruption of rural markets (Hamilton & Villarreal, 2011), especially because many developing countries’ policies and institutions tend to favor cities, oftentimes to the detriment of rural areas (Lipton, 1993; Bezemer & Headey, 2008).

The effects of urban development aid on emigration may be indirect or direct. Indirect effects could operate as follows: aid to urban areas spurs urban development and likely disrupts rural markets in the process, leading rural populations to migrate internally to urban areas to make a living; such urbanization in turn creates a labor surplus in urban areas that depresses wages and pushes people in urban areas to migrate abroad. Maurel and Tuccio (2016) offer a similar theoretical mechanism whereby environmental shocks in developing countries push peasants to the cities and the resulting excess urbanization subsequently leads to increases in international migration to developed countries. Alternatively, urban aid may lead directly to international emigration, such that individuals exit the country directly from rural and/or urban areas without first migrating internally (Grindle, 1988). The latter path to emigration is likely to occur if urban development generated through urban aid has the effect of disrupting rural markets, as is suggested by Hamilton and Villarreal (2011).

In contrast, the development studies literature suggests that rural development will reduce outward migration. Most seminally, the Harris and Todaro model (1970) predicts that the decision to migrate from a rural area reflects the difference between the actual wage in the rural area and the expected wage of the urban area. Within this context, increases in rural wages, generated via aid-induced rural development, should decrease the likelihood of exit. Building on this theme, Rhoda (1983) argues that rural development can reduce urbanization, when it has the effect of increasing cultivatable land, equalizing land or income distribution, or reducing fertility. This has not been lost on donors, as the rise of rural

development aid was partly intended to halt the “march of the peasants” to urban areas (Chimhowu, 2013).

While the Harris Todaro model focuses on rural-to-urban internal migration, its insights regarding rural development may be transferable to international migration as well, given the likely relationship between urbanization and international emigration (Lozano-Ascencio, Roberts, & Bean, 1999; King & Skeldon, 2010) and direct emigration by rural dwellers (Grindle, 1988).⁶ Indeed, it is reasonable to assume that many of the individuals in the international migrant stock were once part of the internal migrant stock, as internal migration “enables rural migrants to familiarize themselves with the urban environment of their own country before venturing abroad on a subsequent international migration” (King & Skeldon, 2010, p. 1623).⁷

Given the aid-as-enabling argument of scholars like de Haas (2010) and Clemens (2014), it must also be noted that rural aid could plausibly spur migration through its enabling effects on rural populations who wish to migrate but lack the means. In this scenario, aid directed to rural areas compels individuals to emigrate internationally or to migrate internally to urban areas. The latter sort of movement could in turn lead urban areas to experience a labor surplus and accompanying wage depression that spurs emigration.

3. Theory and hypotheses

Building upon the literature discussed in the previous section, we argue that all aid is not uniform in its effects, such that some types of aid have a negative impact on migration, whereas other types of aid have a positive impact. Specifically, we expect that large allocations of aid to rural areas leads to reduced rates of emigration, whereas aid targeting urban areas generates heightened migrant outflows. Our hypotheses originate from two distinct theoretical mechanisms with similar observable implications. The first focuses on the preferences of rural and urban populations. The second centers on the impacts of foreign aid on labor markets in rural and urban areas, and the effects of these impacts on population movements.

3.1. Theoretical mechanism #1: Rural and urban aid and preferences

Urban populations are exposed to culture, commodities, and peoples originating beyond their own national borders, which leads them to adopt cosmopolitan cultural practices (Heung, 2009) and offers them knowledge of opportunities abroad and occasions to form cross-national networks (Hernandez-Leon, 2008). These factors contribute to positive attitudes about foreign people and cultures, thereby making urban populations less averse to leaving their home countries and more eager to move abroad. Anecdotal evidence suggests that urbanites seek exit in higher numbers from Russia (Karizhnaya, 2013) and Korea (Kim, 2014). Likewise, evidence from Mexico indicates that urban communities have come to emigrate in higher numbers than their rural counterparts, owing to networks (Hernandez-Leon, 2008) and to a greater range of human capital (Fussell, 2004).

Aid to urban areas enables city dwellers who wish to migrate on the basis of their networks, knowledge of opportunities, aspiration, and human capital, but lack sufficient finances to afford the costly and uncertain journey abroad. Aid targeting urban areas may also

⁶ As King and Skeldon (2010) point out, the internal migrant stock is about four times greater than the international migrant stock, as the former reached about 750 million (UNDP, 2009) and the latter stands at 200 million (IOM, 2008).

⁷ King and Skeldon (2010) cite several cases of such internal-to-international migration: Turkey (King, 1976), Thailand (Skeldon, 2006), and Mexico (del Rey Poveda, 2007; Lozano-Ascencio et al., 1999; Zabin & Hughes, 1995).

create economic opportunities in these areas that pull in additional rural populations, who will in turn become inclined to migrate once they develop the sorts of characteristics that make urbanites eager to move.⁸

In contrast, rural dwellers are less likely to have the cosmopolitan attitudes, networks, or knowledge of opportunities abroad that make emigration desirable. While research on migration preferences among rural populations in the developing world is sparse, survey research from developed countries suggest that residents of rural areas have a strong preference for staying in their current location (Zuiches, 1980). This is not to say that rural populations do not emigrate; they do. However, their motives to migrate are likely to reflect necessity, as opposed to aspiration. For example, Stites, Burns, and Akabwai (2014) find that the primary motives for Ugandan migrants from rural areas were hunger, loss of a family member, or loss of animals. These individuals also cited economic pull factors, reporting that they hoped that migrating would put them in a better economic position to take care of their families.

Development aid that targets rural areas lessens the need for rural dwellers to seek exit by bolstering local employment and offering resources necessary for continued rural livelihoods. Rural aid projects that focus on lessening the impact of climatic shocks on agricultural and livestock sectors would also likely reduce urbanization, which oftentimes intensifies external migration (Maurel & Tuccio, 2016). Rural development aid could also enable emigration, but it will not have this effect if rural dwellers do not wish to emigrate in high numbers. If preferences operate in the manner theorized here, then rural development aid should act to deter emigration by rural populations.

3.2. Theoretical mechanism #2: Labor market impacts of rural and urban aid

According to this line of argument, rural development aid leads to expansion in farm and non-farm activities that prevent rural exodus. As the agricultural sector develops and farm production grows in rural areas, rural populations have greater employment opportunities. This in turn lowers their incentives to uproot their lives and move abroad. Additionally, because public sector involvement looms large in agricultural development – from research and development and extension services to export subsidies (Fan & Rao, 2008; Fan & Brzeska, 2010) – it is likely that the benefits of inclusive agricultural development spill over to the rural public sector. As Chimhowu (2013) explains, rural development aid also focuses on strengthening the administrative capacity of rural governments and supporting local capacity development in the context of a global push toward decentralization.

The negative impact of rural development aid on out-migration to developed countries follows two pathways. First, rural development aid may lead to greater agricultural production and accompanying employment upticks in rural areas. This sort of aid is deeply intertwined with agricultural support, as continued stability of the agricultural sector is key to rural development efforts (Chimhowu, 2013). Within this context, rural development aid likely contributes to the creation of agricultural jobs. Agricultural workers have lower odds of emigrating than those in other sectors (Fussell & Massey, 2004), such that aid-generated jobs in the agricultural sector should further stem the outflow of migrants from rural areas.

Second, rural development aid and beneficial spillovers of agricultural sector expansion and growth produce improvements in the provision of public goods and social services by local

governments (Chimhowu, 2013). Moreover, decentralization and local empowerment efforts promoted by rural development aid create staffing needs, which provide local populations with public and social sector jobs. Both aspects of local development deter exit by rural populations, as better provision of public services increases quality of rural life and the growth of government jobs absorb unemployed or underemployed rural populations.

In contrast, urban development aid is likely to generate further urbanization leading to heightened emigration from small towns and rural areas. Urban aid is largely oriented towards fostering urban development through the creation of business-friendly environments in urban areas. For example, the World Bank emphasizes that its urban development efforts in developing countries focus on, among other things, “helping cities attract investment and jobs by improving land markets, connectivity and regulation at the sub-national level, create an enabling environment for business, and better leverage land and real estate assets.”⁹

Market-led urban development has been demonstrated to produce heightened emigration through its effects on rural and urban markets. Specifically, Hamilton and Villarreal (2011) highlight the disruptive effect of capitalist urban development on rural and agricultural markets, which prompts rural populations to seek exit. Among rural populations seeking exit, those that have developed linkages to other countries, usually by virtue of their rural town's proximity to a neighboring country, are more likely to emigrate abroad than to migrate internally. Other rural populations move to urban areas, which in turn generates international migration. As discussed above, urbanization is likely to create a larger labor supply in urban areas which depresses wages, thereby putting pressure on urban populations to move abroad (Hatton & Williamson, 1994; Maurel & Tuccio, 2016). Additionally, urban aid is likely to exacerbate urban-rural inequality in developing countries, especially when there is urban bias in government policies and donor decisions, which may lead to further increases in migrant outflows (Skeldon, 2002; Stark & Taylor, 1989; Lipton, 1993; Bezemer & Headey, 2008).

3.3. Hypotheses

Regardless of the theoretical mechanism at work, the corresponding hypotheses are the same. Whether due to the preferences of rural populations or to labor market impacts of rural development aid, foreign aid targeting rural areas is expected to lead to lower rates of emigration (*Hypothesis One*). In contrast, foreign aid targeting urban areas is expected to contribute to higher rates of emigration (*Hypothesis Two*), either by affording those who want to emigrate with the resources to do so or through its disruptive effects on rural and urban markets. The analysis that follows tests these hypotheses, while additional tests to parse out the theoretical mechanisms at work are carried out later in the paper.

4. Research design and measurement

To assess our hypotheses, we analyze a dataset of 103 aid receiving countries over 15 years (1995–2010). Our dependent variable is a measure from Brücker et al. (2013) that records countries emigration rates in five year intervals (1995, 2000, 2005, and 2010). We analyze independent variables measuring rural and urban aid with data from AidData (Tierney et al., 2011). We also conduct robustness testing to assuage concerns about endogeneity. Variables and estimation techniques are discussed in greater detail in the pages that follow.

⁸ As noted, there is evidence for a positive relationship between urbanization and emigration (Hatton & Williamson, 1994; Massey, 1988).

⁹ <http://www.worldbank.org/en/results/2013/04/14/urban-development-results-profile>.

4.1. Dependent variable

Our dependent variable is *Emigration Rate*. We use the measure created by Brücker et al. (2013), who generated values through examination of census and population registrar statistics from 20 OECD countries.¹⁰ This approach follows an earlier effort by Defoort (2008), who calculated emigration rates to the United States, Canada, Germany, the United Kingdom, France, and Australia.

This measure does have its weaknesses, as it only covers emigrant flows to 20 OECD countries over a limited time series. However, it is the best data available, as annually recorded migration data is not currently available. Despite its weaknesses, this variable constitutes a major asset to scholars of migrant studies, as it allows for panel data studies of a sort that have been difficult to conduct due to the lack emigration data.¹¹

4.2. Independent variables

Our independent variables measure rural and urban development aid. Specifically, our variables capture bilateral and multilateral aid projects directed towards rural and urban development, each as a percentage of recipient country gross domestic product (GDP): *Rural Dev. Aid (% GDP)* and *Urban Dev. Aid (% GDP)*. Aid data for these variables was extracted from the main AidData dataset (Tierney et al., 2011), which categorizes aid by project type. Specifically, AidData has a set of aid projects classified as Urban Development Aid and another set classified as Rural Development Aid, as shown in Table 1.¹² We calculated each of these aid types as a share of recipient country GDP using data from the World Bank's World Development Indicators.

4.3. Control variables

Several other variables may affect migration rates, including variables corresponding to other types of cross-border economic transfers as well as push and pull factors. To account for these factors, thereby isolating the relationships between aid and emigration variables, we include a series of covariates in our models. Controls include measures of other aid types, per capita GDP, population, urban population, regime type, civil war, foreign direct investment (FDI), oil rents, and international trade.¹³ We discuss these variables in detail below.

First, to isolate the effects of rural and urban aid from aid more generally, we control for all foreign aid transfers aside from rural and urban development aid (*All Other Aid (%GDP)*). Like our independent variables, data for this variable was extracted from the main AidData dataset (Tierney et al., 2011) and divided by recipient country GDP. While some types of aid have been demonstrated to affect emigration rates (Gamso & Yuldashev, 2017), specifically those types understood to promote betterment of political institutions (Jones & Tarp, 2016), we have no reason to suspect that aid in the aggregate will have any significant effect on migration trends.

Additionally, several push factors within migrant source countries are likely to encourage emigration, including conflict, political repression, overpopulation, and economic stagnation. Controls

Table 1

AidData codes for urban and rural development aid; Source: http://docs.aiddata.org/ad4/files/aiddata_coding_scheme_0.pdf.

Code	Sector
43,030	Urban development and management
43030.01	Urban development and management, activity unspecified or does not fit elsewhere in this group
43030.02	Integrated urban development projects
43030.03	Urban development, planning and management
43030.04	Urban renewal and urban housing
43030.05	Urban infrastructure and services
43030.06	Urban land information systems
43,040	Rural development
43040.01	Rural development, activity unspecified or does not fit elsewhere in this group
43040.02	Integrated rural development projects
43040.03	Rural development, planning and management
43040.04	Land use planning and management
43040.05	Rural infrastructure and services
43040.06	Land settlement and resettlement activities
43040.07	Rural/urban integration activities
43040.08	Geographical information systems

corresponding to each of these push factors are featured in our models. First, we control for civil war (*Conflict*), with our expectation being that citizens will leave countries characterized by extreme violence in high numbers. We use the civil war intensity variable from the UCDP/PRIO Armed Conflict Dataset v.4-201, in which “0” corresponds to no conflict, “1” means 25–999 battle-related deaths in a given year, and a score of “2” reflects at least 1000 battle-related deaths in a given year (Gleditsch, Wallensteen, Eriksson, Sollenberg, & Strand, 2002; Pettersson & Wallensteen, 2015).

Political repression is another factor that may encourage individuals to exit their countries of residence. We account for repression with a measure of *Regime Type* drawn from the Quality of Governance (QoG) and standardized by Jones and Tarp (2016). Following Hiskey, Montalvo, and Orcés (2014), we expect that democratic countries will generate fewer emigrants, as residents of democracies should experience less political repression and be more satisfied with the state of governance.¹⁴

Next, we control for *Population* (log). We expect that individuals living in countries with large populations will face higher levels of competition for scarce resources, making them more likely to seek exit. By including this variable, our analysis is consistent with other studies in this area (Breuing, Cao, & Luedke, 2012; Bermeo & Leblang, 2015). Population data is also drawn from Jones and Tarp (2016).

We next include a control for *GDP Per Capita* (log). Per capita GDP could either have a positive or a negative effect on emigration rates, depending on whether economic growth and development act to deter or to enable migration. While it is intuitive to think that individuals will be less likely to seek exit when their incomes are higher, scholars such as de Haas (2007) argue that this income will allow exit by people who wish to migrate but would otherwise lack the means. In either case, it is necessary to control for per capita GDP, as it is likely to contribute to variation in the dependent variable. We also include a variable for *Squared GDP Per Capita* in one variant of the model, following the argument that there is an inverted U-shaped relationship between income and migration (Martin & Taylor, 1996).¹⁵

We control for *Urban Population* (as a share of the total population), using data from the World Development Indicators.

¹⁰ Australia, Austria, Canada, Chile, Denmark, Finland, France, Germany, Greece, Ireland, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States.

¹¹ Emigration rate as measured by Brücker et al. does include refugees and it is not possible to separate out refugees from other types of migrants using this data.

¹² In country-years where no values for rural or urban development aid were identified by AidData, but values were provided for other types of aid, we coded rural and urban development aid as zero.

¹³ See Table 7 in the Appendix for descriptive statistics of all variables used in this analysis; see Table 8 (also in the Appendix) for a correlation matrix of all right hand side variables used in the cross-national analysis.

¹⁴ We also acknowledge that individuals may be subject to fewer restrictions on movement in democratic countries, perhaps making emigration from these sorts of countries more likely.

¹⁵ GDP data is drawn from Jones and Tarp (2016).

Urbanization has been demonstrated to lead to higher rates of emigration (Hatton & Williamson, 1994; Massey, 1988), such that this factor could be contributing to variation in the dependent variable. We also use the *Urban Population* variable as the dependent variable in an additional test meant to assess the indirect pathway by which aid may lead to emigration through its effects on urbanization. To test this pathway, we analyze models in which *Urban Population* serves as the dependent variable and *Rural Dev. Aid (% GDP)* and *Urban Dev. Aid (% GDP)* serve as the independent variables.¹⁶

To account for alternative international economic transfers that could affect migration rates, we control for trade and FDI (each as a percentage of GDP). Like foreign aid, trade and foreign investment have been highlighted as development friendly tools for reducing migration (Böhning, 1994). Given the possibility that trade and FDI are affecting migration trends in a manner similar to foreign aid, it is necessary to control for them in order to isolate the relationships between aid variables and emigration. Trade and FDI data comes from the World Development Indicators.

Next, we control for oil rents (as a percentage of GDP). Oil rents may be related to foreign aid in that both constitute a form of non-tax revenue (Morrison, 2009). Additionally, oil production is likely related to migrant labor dynamics (Halliday, 1977; Arnold & Shah, 1984). Data for oil rents comes from the World Development Indicators.

In a separate model, we include variables intended to account for factors within migrant destination countries in the Global North that may pull in migrants from our sample countries. These variables capture labor markets and border security in the OECD countries that attract large numbers of migrants. For the labor market, we add two variables: first, average annual unemployment rates for all of the OECD countries that contribute to the dependent variable and, second, the logged annual rates of GDP (at purchasing power parity) for all OECD countries. These measures collectively capture wealth-levels in migrant destination countries and potential labor market opportunities for migrants.¹⁷ To account for border security, we use the (logged) number of annual deaths from terrorist incidents for the 20 OECD countries that are used to create the dependent variable, as major terrorist incidents are often followed by heightened border security (Alden, 2008; Andreas, 2003).¹⁸

4.4. Model specifications

We estimate linear regressions with robust standard errors clustered by country to account for heteroscedasticity. We consider models with random effects as well as country and year fixed effects that allow us to account for unobserved country- and year-specific factors. Control variables are added gradually over several models, so as not to create a garbage can effect (Achen, 2005). Independent and control variables have been lagged by one year to account for the potential delayed reaction of migration outflows to aid inflows and to allay concerns about potential endogeneity. We analyze a model with a lagged dependent variable to account for serial correlation and we also conduct additional tests to assuage concerns about endogeneity.

5. Findings and discussion

The results provide support for *Hypothesis One*: aid targeted towards rural development is negatively associated with emigration rates from recipient countries. In contrast, we do not find a significant relationship between urban aid and emigration rates. The first set of findings, featuring country and year fixed effects, are presented in Table 2. Results are presented over six models: Model 1 contains only the independent variables of interest, *Rural Dev. Aid (% GDP)* and *Urban Dev. Aid (% GDP)*; Model 2 includes independent variables and controls for all other aid; Model 3 adds controls for push factors; Model 4 includes controls for other types of economic transfers as well as urban population and oil rents; Model 5 adds the quadratic GDP term, to account for the potential importance of an income hump effect; Model 6 includes pull factor variables accounting for economic and political factors in migrant destination countries.

As Table 2 displays, the coefficient for *Rural Dev. Aid (% GDP)* is negative across the models, meaning that higher levels of this sort of aid are associated with lower emigration rates. On average, a one unit increase in rural development aid as percent of GDP is accompanied by a 0.93 reduction in emigrate rate. In contrast, the coefficients for *Urban Dev. Aid (% GDP)* are not significant in any of the models, indicating no demonstrable relationship between this sort of aid and emigration. Among the other variables, *Population*, *Urban Population*, and *OECD GDP* are significant in one or more of the models, as are year fixed effects (not shown).

The negative value for *Population* appears counterintuitive, as one would expect overpopulation to be a push factor leading individuals to seek exit. However, this is probably attributable to our dependent variable measure: population is the denominator, meaning that countries with larger populations are likely to have smaller emigration rates.¹⁹ Indeed, this result is consistent with earlier work in this area using a similar measure of emigration rate (Docquier & Marfouk, 2006). The positive effect of urbanization is consistent with earlier work as well (Hatton & Williamson, 1994; Massey, 1988). The positive relationship between *OECD GDP* and emigration is not surprising, as we would expect strong economic performance in destination countries to attract migrants.²⁰

The results hold in models with country (but without year) fixed effects and in models with random effects (see Tables 10 and 11 in the Appendix).²¹ Collectively, the results strongly suggest that rural development aid is accompanied by the reduction of emigration from aid recipient countries. In contrast, we find no support for the other hypothesis concerning urban developing aid.

Next, we investigate the indirect path by which aid may affect urbanization rates and, in turn, urbanization rates may affect emigration rates. To do so we analyze a model in which *Urban*

¹⁶ Control variables in this set of models mirrors those in the main models, except that pull factor variables discussed below are not included, since they are not likely to have any bearing on internal migration.

¹⁷ Data for the GDP variable was drawn from EuroMonitor International (<http://www.euromonitor.com>); unemployment data comes from the World Development Indicators.

¹⁸ Data for terrorism deaths was drawn from the RAND Database of World Terrorism Incidents (<http://smapp.rand.org/rwtid>).

¹⁹ Another explanation for this negative relationship between population and emigration rate is that communities simultaneously experience decreases in fertility and increases in migration outflows during times of crisis (Davis, 1963; Ebanks, George, & Nobbe, 1975). Within this context, we would expect to see emigration increase as population decreases.

²⁰ We also considered models in which the OECD variables (*OECD Terror Deaths*, *OECD GDP*, and *Ave. OECD Unemployment*) are weighted by measures of distance from sample countries to OECD countries. In one set of models, we weight OECD variables by the average distance from each sample country to the 20 OECD countries used to create the dependent variable; in another set of models, we weight OECD variables by the distance from each sample country to the nearest OECD country. Our key results hold in both sets of models (see Table 9 in the Appendix). Distance data comes from Mayer and Zignago (2011).

²¹ We also include a random effects model in the Appendix with a lagged dependent variable to account for autocorrelation (see Table 12 in the Appendix); our key results are not affected. We reserve the lagged dependent variable for our random effects model, following Nickell (1981).

Table 2
Independent variables measure bilateral/multilateral aid projects intended to foster rural and urban development. Robust standard errors in parentheses, clustered by country.
***p < 0.01, **p < 0.05, *p < 0.1.

Dependent Variable: Emigration Rate	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Rural Dev. Aid (% GDP)	–1.629*** (0.230)	–1.416*** (0.400)	–1.153*** (0.400)	–0.927** (0.382)	–0.930** (0.367)	–0.930** (0.367)
Urban Dev. Aid (% GDP)	–0.633 (0.638)	–0.539 (0.674)	–0.149 (1.005)	–0.195 (1.144)	–0.259 (1.164)	–0.259 (1.164)
All Other Aid (% GDP)		–0.0194 (0.0298)	–0.00850 (0.0331)	–0.0195 (0.0393)	–0.0170 (0.0382)	–0.0170 (0.0382)
GDP Per Capita			–0.00304 (0.00587)	–0.00901 (0.00703)	0.0637 (0.0487)	0.0637 (0.0487)
GDP Per Capita Squared					–0.00478 (0.00331)	–0.00478 (0.00331)
Population			–0.0557** (0.0241)	–0.0719** (0.0303)	–0.0888** (0.0366)	–0.0888** (0.0366)
Regime Type			–7.58e–06 (1.74e–05)	–1.58e–05 (1.92e–05)	–1.84e–05 (1.94e–05)	–1.84e–05 (1.94e–05)
Civil War Intensity			–0.000473 (0.000999)	–0.00150 (0.00117)	–0.00161 (0.00114)	–0.00161 (0.00114)
Urban Population				0.000960 (0.000625)	0.00107* (0.000611)	0.00107* (0.000611)
FDI (% GDP)				–0.000186 (0.000194)	–0.000193 (0.000191)	–0.000193 (0.000191)
Oil Rents (% GDP)				–7.63e–05 (0.000229)	–6.31e–05 (0.000228)	–6.31e–05 (0.000228)
Trade (% GDP)				1.01e–05 (6.51e–05)	–4.61e–07 (6.64e–05)	–4.61e–07 (6.64e–05)
OECD Terror Deaths						–0.000224 (0.000293)
OECD GDP						0.0572*** (0.0197)
Ave. OECD Unemployment						0.000600 (0.000910)
Observations	408	400	395	373	373	373
R-squared	0.183	0.186	0.246	0.277	0.287	0.287
Number of Countries	103	101	100	98	98	98
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Population serves as the dependent variable and our aid variables continue to be the independent variables.²² Results (presented in Table 3) provide mixed support for this argument. Neither of the aid variables are significant, but their coefficients are very large and in the expected direction. Significance aside, it appears that rural development aid has a negative relationship to urbanization, suggesting that rural aid prevents rural people from urbanizing, while urban development aid has a positive relationship to urbanization, such that urban aid encourages rural populations to move internally to urban areas. The significant coefficient for *Urban Population* in Table 2 supports the notion that urbanization in turn prompts emigration.

Collectively, the results above suggest that inflows of rural development aid are accompanied by decreases in emigration. While we investigated the possibility that this reduction in emigration is an effect of rural aid deterring urbanization, we cannot say with a significant degree of certainty that this is occurring.

5.1. Tests for endogeneity

A potential concern regarding the results presented thus far is that there may be problems of endogeneity, due to reverse causality or omitted variables. It is possible that the apparent relationship between rural development aid and emigration rate is spurious, such that some unaccounted factor is driving variation

in both of these variables. Likewise, it is plausible that countries with lower emigration rates receive different sorts of foreign aid, for one reason or another. To alleviate concerns, instrumental variable analysis is conducted.

There has been much discussion about appropriate instruments for foreign aid.²³ However, identifying an appropriate instrument for disaggregated aid variables is quite difficult, as the common aid instruments are intended to capture total aid. Absent a suitable instrument, we follow the recommendation of Lewbel (1997) and use the second and third moments of the potentially endogenous variable (*Rural Aid (% GDP)*) as instruments.²⁴ As Table 13 (in the Appendix) demonstrates, the result regarding *Rural Aid (% GDP)* and *Emigration Rate* holds where these instrumental variables are used.

As an additional safeguard against endogeneity, we use a propensity score matching technique for continuous treatment variables (Bia & Mattei, 2008). Propensity score matching can be used with observational data to test whether control variables are balanced across treatment and control groups. Balance across these groups ensures that regression results do not reflect selection bias due to confounding factors. We conducted propensity score

²³ See Bazzi and Clemens (2013) for discussion of the various instruments that have been used for foreign aid.

²⁴ Lewbel (1997) demonstrates that second moments $(X_i - \text{mean}(X))^2$, third moments $(X_i - \text{mean}(X))^3$, and higher moments of endogenous regressors in the presence of heteroscedasticity are unrelated to the error term and thus provide good instruments for two staged least squares estimation when other instruments are not available or sufficient. Identification is achieved through the use of heteroscedasticity and the minimum requirement for sample size is nine.

²² For the sake of consistency, we use the same time series for these models, such that our variables cover 1995–2010 in five year intervals (1995, 2000, 2005, and 2010).

Table 3

Independent variables measure bilateral/multilateral aid projects intended to foster rural and urban development. Robust standard errors in parentheses, clustered by country. ***p < 0.01, **p < 0.05, *p < 0.1.

Dependent Variable: Urban Population	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13
Rural Aid (% GDP)	–94.51 (114.2)	–51.17 (134.0)	–42.74 (151.0)	–10.10 (141.8)	–43.71 (144.2)	–45.67 (144.9)	
Urban Aid (% GDP)	34.93 (435.2)	49.11 (414.5)	105.9 (367.2)	80.38 (360.6)	93.95 (352.4)		101.2 (349.8)
All Other Aid (% GDP)		–2.888 (4.433)	–5.113 (5.197)	–5.221 (5.754)	–4.201 (5.129)	–4.112 (5.139)	–4.796 (4.226)
GDP Per Capita			1.750 (1.577)	1.798 (1.627)	–11.92 (9.220)	–11.90 (9.205)	–11.96 (9.200)
GDP Per Capita Squared					0.948 (0.632)	0.945 (0.630)	0.950 (0.630)
Population			7.794** (3.058)	7.407** (3.135)	12.40*** (3.677)	12.41*** (3.677)	12.36*** (3.687)
Regime Type			0.00827** (0.00398)	0.00739* (0.00386)	0.00762* (0.00391)	0.00757* (0.00385)	0.00773* (0.00393)
Civil War Intensity			0.267 (0.287)	0.440* (0.254)	0.424* (0.242)	0.424* (0.242)	0.423* (0.241)
FDI (% GDP)				–0.0126 (0.0245)	0.00631 (0.0245)	0.00649 (0.0245)	0.00488 (0.0233)
Oil Rents (% GDP)				–0.0278 (0.0508)	–0.0398 (0.0553)	–0.0401 (0.0552)	–0.0391 (0.0552)
Trade (% GDP)					0.00278 (0.00704)	0.00275 (0.00701)	0.00285 (0.00705)
Observations	416	408	403	391	381	381	381
R-squared	0.565	0.568	0.612	0.628	0.648	0.648	0.648
Number of Countries	105	103	102	102	100	100	100
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

matching using the covariates in the most extensive variation of our model (corresponding to Model 6 in Table 2) to clarify that the sample countries that receive high and low levels of rural development aid do not have any systematic differences that would be indicative of selection bias. The results of this test show “decisive evidence against the balancing property” as “the balancing property is satisfied at a significance level lower than 0.01.” This means that the treatment and control groups (those receiving low and high levels of rural development aid) are similar enough that we have little reason to fear that the results of our regression analysis are driven by selection bias.²⁵ In tandem with our instrumental variable analysis, this should assuage concerns about endogeneity.

5.2. Testing theoretical mechanisms

The results presented so far support *Hypothesis One*, but they do not provide insight as to whether one or both theoretical mechanisms are correct. To gain insights as to whether our theoretical mechanisms accurately explains these results, we turn to secondary analysis with additional data from a small sample of countries from the third wave of the Arab Barometer. Uniquely among the various Barometer survey datasets,²⁶ the Arab Barometer asks respondents if they think about emigrating from their country of residence. We aggregated responses to this question into a dummy variable of ‘Yes’ and ‘No’ categories²⁷ and then ran tests to determine whether variables corresponding to our proposed mechanisms provided results consistent with these mechanisms.

²⁵ Results are not presented in the text, but code is included in our replication materials.

²⁶ Which also include the Latino, African, and European Barometers.

²⁷ There are several ‘Yes’ answers available to respondents, with each providing a different reason for thinking about emigrating (e.g. ‘yes, for political reasons’ and ‘yes, for economic reasons’).

Two variables are used to this end: *Rural/Urban* and *Agricultural Worker*. *Rural/Urban* captures whether the respondent lives in a rural or urban area, and is coded ‘1’ for urban and ‘2’ for rural. *Agricultural Worker* is coded ‘1’ if the respondent or his/her spouse works in the agricultural sector and ‘2’ otherwise.

If analysis of the *Rural/Urban* variable demonstrates that rural populations are significantly less likely to express interest in emigrating than urbanites, it will support the preferences mechanism: rural aid reduces outflows of rural populations because it provides them with necessary means to stay in their towns, which they have little interest in leaving. On the other hand, if agricultural sector workers are less interested in emigrating, then the mechanism focusing on the impacts of rural aid on rural employment will find support, since agricultural sector employment is likely to be bolstered by rural development aid.

First, we conduct a simple chi-squared test to see if rural populations in the twelve Arab countries covered by the Arab Barometer²⁸ are significantly less likely to think about emigrating. Contrary the expectations of our preferences mechanism, chi-squared test results, presented in Table 4, show that there is little difference between rural and urban citizens in this regard.

About 69% of respondents in both rural and urban areas expressed no interest in emigrating, and the p-value is not significant. This indicates that there is no systematic difference between rural and urban populations in terms of their attitudes about migrating.

Our second mechanism posits that rural aid boosts employment in agriculture, through its support for agricultural production. With this in mind, we turn to the *Agricultural Worker* variable, which we analyze using the same sort of chi-squared test (Table 5).

The result shows that approximately 80 percent of agricultural workers do not think about emigrating, compared to

²⁸ Algeria, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Palestine, Saudi Arabia, Sudan, Tunisia, and Yemen.

Table 4

Cross-tab and chi-squared test for rural/urban.

	Do not think about emigrating	Do think about emigrating	Total
Rural	3065	2345	4427
Urban	5428	1362	7773
Total	8493	3707	12,200
$X^2 = 0.4756$			P-value = 0.49

Table 5

Cross-tab and chi-squared test for agricultural worker.

	Do not think about emigrating	Do think about emigrating	Total
Agricultural Worker	473	120	593
Other Worker	9774	4022	13,796
Total	10,247	4142	14,389
$X^2 = 22.0545$			P-value = 0.000

approximately 68 percent of other types of workers. The significant p-value shows that agricultural workers are significantly less likely to think about emigrating than workers in other economic areas. Thus, if rural aid is generating higher levels of agricultural employment then it should also be reducing the share of the rural population pondering exit.

Next, we analyze the two variables together in a logistic regression, along with other variables corresponding to likely push factors. In this model, the dichotomous emigration measure is the dependent variable, while the two measures discussed above – *Rural/Urban* and *Agricultural Worker* – are the independent variables. We also control for perceived state of the national economy (*Economic Situation*),²⁹ *Relative Deprivation*,³⁰ and trust of government (*Government Trust*),³¹ as we understand each of these to correspond to likely push factors contributing to emigration. Additionally, we control for *Public/Private Sector*,³² on the basis that public sector workers may be less inclined to emigrate, due to their relatively stable and lucrative jobs. We account for country-specific factors that might affect the dependent variable with country fixed effects. We expect positive coefficients for each of our X-variables, with the exception of *Rural/Urban*, which will be negative if rural populations think about emigrating less often than urban populations.

Results, presented in Table 6, provide further evidence against the preferences mechanism and in favor of the alternative: rural aid reduces emigration through its positive effects on agricultural sector employment.

As the results show, *Agricultural Worker* is significant and positive, while *Rural/Urban* is not significant. Individuals working in agricultural jobs are less likely to think about emigrating than those in other sectors. These results suggest that increases in agricultural sector employment generated by rural development aid will reduce the share of individuals wishing to emigrate.

²⁹ The corresponding question in the Arab Barometer is: "How would you evaluate the current economic situation in your country?" Respondents answered on a one-to-four scale from "very good" (1) to "very bad" (4).

³⁰ The corresponding question in the Arab Barometer is: "To what extent do you feel that you are being treated equally compared to other citizens in your country?" Respondents answered on a one-to-four scale from "to a great extent" (1) to "not at all" (4).

³¹ The corresponding question in the Arab Barometer is: To what extent do you trust the government (paraphrased). Respondents answered on a one-to-four scale from "I trust it to a great extent" (1) to "I absolutely do not trust it" (4).

³² *Public/Private Sector* is coded '1' if the respondent works in the public sector and '2' if the respondent works in the private sector.

Table 6

Linearized standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

Dependent Variable: Emigration (N/Y)	Model 14
Rural/Urban	0.0118 (0.0850)
Agricultural Worker	0.629*** (0.193)
Public/Private Sector	0.190** (0.0870)
Economic Situation	0.256*** (0.0571)
Relative Deprivation	0.268*** (0.0428)
Government Trust	0.0549 (0.0451)
Observations	4964
Number of Countries	10
Country Dummies	Yes
GoF F-Statistic	1.454
GoF Prob > F	0.159

With the exception of *Government Trust*, the control variables are significant and positive, as expected. This suggests that people are more inclined to consider emigrating when they perceive the national economy to be poor and their own treatment to be worse than that of fellow citizens. To the extent that rural aid assists progress in these areas, it can be further expected to reduce migrant outflows. We have suggested that rural aid is likely to improve the administrative capacity of rural governments and that this heightened administrative capacity contributes to the negative effect of rural aid on emigration rates, but the results presented in Table 6 provide mixed support for this aspect of our argument. The nonsignificant coefficient for *Government Trust* suggests enhanced public service provision through rural aid is not alleviating the desire to emigrate. That said, the positive coefficient for *Public/Private Sector* suggests that those working in the public sector are less eager to migrate, indicating that increases in public sector employment generated through enhanced rural governance efforts will reduce the size of the population that wishes to emigrate.

Collectively, the results of this segment suggest that rural development aid reduces emigration through its positive impacts on agricultural sector employment in rural areas. In contrast, we do not find that rural populations are less or more likely to prefer to migrate than their urban counterparts. It must be acknowledged that this data captures intentions, as opposed to actions, such that we do not know whether the individuals that responded to the survey actually moved or not.³³ When taken in tandem with our cross-national analysis, however, these results suggest that rural aid deters emigration through its impacts on structural features of rural labor markets, not because of its interaction with local preferences. This inference is also consistent with the aforementioned findings that agricultural workers migrate in relatively low numbers (Fussell and Massey, 2004).

6. Conclusion

The results of this study support the notion that some foreign aid does reduce outward migration from developing countries.

³³ We look forward to conducting additional test in the future, if geocoded migration data becomes available.

Table 7
Descriptive statistics.

Dataset	Variable	Mean	Std. Dev.	Min	Max
<i>Cross-National Data</i>					
	Emigration Rate	.0431022	.0727817	.0005471	.4876006
	Rural Dev. Aid (% GDP)	.000182	.0009444	0	.0168726
	Urban Dev. Aid (% GDP)	.0000481	.0003021	0	.0040103
	Other Aid (% GDP)	.0353076	.0469458	9.08e–06	.4075449
	GDP Per Capita (log)	7.862793	.9651777	4.684037	9.686779
	Squared GDP Per Capita	62.75285	15.07027	21.9402	93.83369
	Population (log)	16.1489	1.648923	11.73997	21.00948
	Regime type	16.54597	93.9179	–172.6023	171.9888
	Civil War Intensity	.2971698	.5845865	0	2
	Urban Population (% Total)	45.03775	20.71079	7.023	93.0334
	FDI (% GDP)	3.527388	5.237954	–4.025598	58.00362
	Oil Rents (% GDP)	4.634133	10.8745	0	68.84435
	Trade (% GDP)	74.54976	38.3199	.0995824	290.4993
	OECD Terror Deaths (log)	3.104585	1.327219	1.94591	5.257495
	OECD GDP (log)	17.24819	.2415462	16.90886	17.54927
	Ave. OECD Unemployment	7.405256	.7896088	5.5	8.695
<i>Arab Barometer Data</i>					
	Emigration (N/Y)	1.289818	.453693	1	2
	Rural/Urban	1.365189	.4815023	1	2
	Public/Private Sector	1.560322	.4963871	1	2
	Agricultural Worker	1.959049	.1981845	1	2
	Economic Situation	2.854986	.9057522	1	4
	Relative Deprivation	2.472734	.9647437	1	4
	Government Trust	2.732805	1.093501	1	4

Specifically, our analysis of a sample of 103 developing countries over a time series spanning 15 years reveals that aid directed towards rural development has a negative relationship with the emigration rates of aid recipient countries. Our secondary analysis of a sub-sample of Arab countries suggests that this effect is attributable to the positive impacts of this sort of aid on agricultural sector employment, as agricultural workers appear less eager to emigrate. In addition, it is possible that rural aid deters emigration through its positive effects on public sector employment or other facets of aid-based rural development.

In contrast, urban development assistance does not have a statistically significant relationship with emigration rates. We had argued that urban development aid enables better connected and skilled urbanites to move abroad in pursuit of better opportunities while also generating higher levels of urbanization (as rural populations move in to take construction and service sector jobs created by urban development projects) that, in turn, lead to heightened emigration rates. While findings presented here do not provide support for this interpretation, we plan to retest this hypothesis in the future using more fine-tuned data analysis (as discussed below).

The findings of this paper contribute to the debate in the literature regarding the consequences of foreign aid on international migration. As noted, our results show that some forms of aid act quite differently than others in terms of their effects on emigration rates. Unlike [de Haas \(2007, 2010\)](#) and [Clemens \(2014\)](#), who argue that aid provision produces heightened emigration rates, our results suggest that rural development assistance reduces migrant outflows from aid-recipient countries.

As international migration has reached unprecedented levels ([United Nations, 2016](#)) and rates of urbanization continue at an unsustainable pace across the globe ([United Nations, 2014](#)), it is imperative for policymakers to consider increasing rural development aid to boost both farm and non-farm activities, infrastructure, and institutions in rural areas of developing countries. In addition to necessity, rural development aid should be

good for national development, as wide dispersion of aid flows reduces inequality and regional divides. Our results suggest that increasing rural aid provision should also be in the interests of policymakers in donor countries that wish to reduce migrant inflows.

We propose that future research should expand our analysis by constructing a more comprehensive measure of rural and urban aid projects using geocoded data, as a measure of spatial concentration or dispersion of foreign aid projects across rural and urban areas would provide a better measure of aid flows into urban and rural areas.³⁴ In addition, we suggest further disaggregation of aid projects based on specific project intent and objectives to better parse out the mechanisms at work. Finally, developing new measures of international migration that disaggregate emigration rates on the basis of rural and urban would enhance our understanding of the relationships between rural and urban aid and migration.

Acknowledgements

Earlier drafts of this paper were presented at the 2017 International Studies Association meeting in Baltimore, MD, and at the 2017 workshop on Conflict, Aid, and Refugees at the University of Arizona. The authors thank participants in those sessions, as well as the editor and two anonymous reviewers.

Appendix A

See [Tables 7–13](#)

³⁴ While [Strandow, Findley, Nielson, and Powell \(2011\)](#) do provide data along these lines, their dataset only covers World Bank projects.

Table 8

Correlation matrix with all independent and control variables used in cross-national analysis; *p < 0.05, **p < 0.01, ***p < 0.001.

	Rural Aid (% GDP)	Urban Aid (% GDP)	All Other Aid (% GDP)	GDP Per Capita	GDP Per Capita Squared	Population	Regime Type
Rural Dev. Aid (% GDP)	1						
Urban Dev. Aid (% GDP)	0.00711	1					
All Other Aid (% GDP)	0.476***	0.101*	1				
GDP Per Capita	−0.113*	−0.0960	−0.445***	1			
GDP Per Capita Squared	−0.115*	−0.0968	−0.438***	0.998***	1		
Population	−0.141**	−0.0833	−0.398***	0.0299	0.0335	1	
Regime Type	0.0536	−0.0549	0.0997	0.324***	0.330***	−0.131*	1
Civil War Intensity	−0.0449	−0.0557	−0.109*	−0.0831	−0.0831	0.322***	0.180***
Urban Population	−0.144**	−0.0692	−0.333***	0.744***	0.753***	0.0750	0.287***
FDI (% GDP)	0.0552	−0.0390	0.0749	−0.0263	−0.0225	−0.151**	−0.0424
Oil Rents (% GDP)	−0.0559	−0.0602	−0.185***	0.182***	0.179***	0.105*	0.297***
Trade (% GDP)	0.00449	−0.0444	0.122*	0.133**	0.126*	0.443***	0.0772
OECD Terror Deaths	−0.0116	0.0859	−0.00315	0.0583	0.0598	0.0271	0.0530
OECD GDP	0.108*	0.128*	0.0465	0.127*	0.132*	0.0577	0.0781
Ave. OECD Unemployment	−0.0544	−0.0573	−0.00229	−0.0379	−0.0392	−0.0272	−0.0537
Civil War Intensity	Urban Population	FDI (% GDP)	Oil Rents (% GDP)	Trade (% GDP)	OECD Terror Deaths	OECD GDP	Ave. OECD Unemployment
1							
−0.0936	1						
−0.0955	0.0606	1					
0.170***	0.209***	0.183***	1				
−0.232***	−0.00451	0.319***	0.108*	1			
−0.0356	0.0654	0.0658	0.101*	0.124*	1		
−0.0504	0.115*	0.122*	0.0681	0.0750	0.607***	1	
0.0154	−0.0536	−0.146**	−0.0708	0.0875	−0.615***	−0.579***	1

Table 9

Independent variables capture bilateral/multilateral aid projects intended to foster rural and urban development. These models match those in Table 2, except that OECD variables are weighted by distance. OECD variables in Models 15–17 are weighted by average distance of OECD countries to sample countries; OECD variables in Models 18–20 are weighted by distance of sample country to closest OECD country. Robust standard errors in parentheses, clustered by country. **p < 0.01, *p < 0.05, p < 0.1.

Dependent Variable: Emigration Rate	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20
Rural Dev. Aid (% GDP)	−1.025** (0.450)	−1.425*** (0.438)	−0.935** (0.390)	−0.977** (0.377)	−0.919*** (0.329)	−0.869*** (0.292)
Urban Dev. Aid (% GDP)	−0.185 (1.144)	0.553 (1.388)	0.639 (1.603)	−0.212 (1.099)	0.614 (1.366)	1.089 (1.466)
All Other Aid (% GDP)	−0.0164 (0.0366)	−0.0185 (0.0414)	−0.00507 (0.0377)	−0.0188 (0.0383)	−0.0173 (0.0355)	−0.00581 (0.0327)
GDP Per Capita	0.0596 (0.0495)	0.0163 (0.0418)	−0.0268 (0.0359)	0.0796 (0.0487)	−0.0426 (0.0312)	−0.0305 (0.0349)
GDP Per Capita Squared	−0.00448 (0.00336)	−0.00114 (0.00283)	0.00233 (0.00233)	−0.00579* (0.00332)	0.00315 (0.00205)	0.00261 (0.00227)
Population	−0.0873** (0.0376)	−0.0538** (0.0246)	−0.0129** (0.00607)	−0.0815** (0.0358)	−0.0100 (0.0206)	−0.0115* (0.00602)
Regime Type	−1.63e−05 (1.90e−05)	−8.51e−06 (1.95e−05)	−8.04e−06 (1.87e−05)	−1.22e−05 (1.87e−05)	−1.22e−05 (1.95e−05)	−7.52e−07 (1.83e−05)
Civil War Intensity	−0.00167 (0.00115)	−0.00156 (0.00106)	−0.00107 (0.00107)	−0.000840 (0.000993)	−0.00123 (0.00109)	−0.00142 (0.00111)
Urbanization	0.00105* (0.000628)	0.00103 (0.000677)	0.000735** (0.000343)	0.00103* (0.000589)	0.00133* (0.000694)	0.000770** (0.000347)
FDI (% GDP)	−0.000188 (0.000192)	−7.91e−05 (0.000198)	−7.23e−07 (0.000171)	−0.000221 (0.000193)	−7.08e−05 (0.000210)	2.20e−05 (0.000171)
Oil Rents (% GDP)	−4.00e−05 (0.000225)	−1.89e−05 (0.000216)	−0.000224 (0.000192)	−6.30e−05 (0.000218)	0.000107 (0.000225)	−0.000175 (0.000186)
Trade (% GDP)	2.95e−06 (6.77e−05)	1.13e−05 (7.37e−05)	2.14e−05 (6.63e−05)	−1.26e−05 (6.72e−05)	3.10e−05 (7.44e−05)	4.60e−05 (6.34e−05)
OECD Terror Deaths (weighted)	2.16e−07 (1.46e−07)	4.22e−09 (4.06e−08)	1.21e−07** (5.65e−08)	−1.17e−07 (1.54e−07)	−1.17e−09 (8.54e−08)	1.14e−07 (1.11e−07)
OECD GDP (weighted)	5.28e−07 (2.01e−06)	4.13e−06** (1.60e−06)	1.60e−07 (2.07e−07)	−3.46e−06* (1.97e−06)	6.57e−07 (2.48e−06)	1.34e−08 (2.23e−07)
Ave. OECD Unemployment (weighted)	7.49e−07 (5.62e−07)	6.07e−08 (1.07e−07)	−2.05e−07* (1.10e−07)	4.14e−07 (4.91e−07)	−1.19e−07 (1.81e−07)	−2.96e−07 (2.29e−07)
Observations	373	373	373	373	373	373
R-squared	0.293	0.241		0.312	0.167	
Number of Countries	98	98	98	98	98	98
Country FE	Yes	Yes	No	Yes	Yes	No
Year FE	Yes	No	No	Yes	No	No

Table 10

Independent variables measure bilateral/multilateral aid projects intended to foster rural and urban development. These models match those in Table 2, except that they do not include year fixed effects. Robust standard errors in parentheses, clustered by country. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Dependent Variable: Emigration Rate	Model 21	Model 22	Model 23	Model 24	Model 25	Model 26
Rural Dev. Aid (% GDP)	–0.890*** (0.243)	–0.772*** (0.282)	–1.087*** (0.413)	–0.920*** (0.291)	–0.916*** (0.298)	–0.930** (0.367)
Urban Dev. Aid (% GDP)	1.956* (1.165)	2.041 (1.241)	1.033 (1.158)	0.716 (1.383)	0.645 (1.316)	–0.259 (1.164)
All Other Aid (% GDP)		–0.0118 (0.0276)	–0.0146 (0.0260)	–0.0161 (0.0320)	–0.0191 (0.0322)	–0.0170 (0.0382)
GDP Per Capita			0.0141* (0.00737)	0.00793 (0.00733)	–0.0436 (0.0302)	0.0637 (0.0487)
GDP Per Capita Squared					0.00324* (0.00194)	–0.00478 (0.00331)
Population			0.0107 (0.00904)	–0.00927 (0.0177)	–0.00499 (0.0168)	–0.0888** (0.0366)
Regime Type			–1.06e–06 (1.68e–05)	–1.33e–05 (1.81e–05)	–1.13e–05 (1.84e–05)	–1.84e–05 (1.94e–05)
Civil War Intensity			0.000296 (0.000950)	–0.00108 (0.00109)	–0.00105 (0.00109)	–0.00161 (0.00114)
Urbanization				0.00146** (0.000714)	0.00133* (0.000686)	0.00107* (0.000611)
FDI (% GDP)				–5.71e–05 (0.000212)	–6.64e–05 (0.000213)	–0.000193 (0.000191)
Oil Rents (% GDP)				0.000155 (0.000224)	0.000128 (0.000222)	–6.31e–05 (0.000228)
Trade (% GDP)				2.54e–05 (7.25e–05)	3.24e–05 (7.36e–05)	–4.61e–07 (6.64e–05)
OECD Terror Deaths						–0.000224 (0.000293)
OECD GDP						0.0572*** (0.0197)
Ave. OECD Unemployment						0.000600 (0.000910)
Observations	408	400	395	373	373	373
R-squared	0.006	0.007	0.103	0.159	0.165	0.287
Number of Countries	103	101	100	98	98	98
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	No	No

Table 11

Independent variables capture bilateral/multilateral aid projects intended to foster rural and urban development. These models match those in Table 2, except that they do not include country or year fixed effects. Robust standard errors in parentheses, clustered by country. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Dependent Variable: Emigration Rate	Model 27	Model 28	Model 29	Model 30	Model 31	Model 32
Rural Dev. Aid (% GDP)	–0.902*** (0.240)	–0.825*** (0.271)	–0.741** (0.307)	–0.855*** (0.268)	–0.816*** (0.256)	–1.159*** (0.413)
Urban Dev. Aid (% GDP)	1.945 (1.208)	1.998 (1.268)	2.139 (1.418)	1.292 (1.369)	1.323 (1.362)	–0.472 (0.990)
All Other Aid (% GDP)		–0.00783 (0.0273)	–0.00416 (0.0251)	–0.00854 (0.0299)	–0.0101 (0.0298)	–0.0264 (0.0373)
GDP Per Capita			0.0189*** (0.00518)	0.0106* (0.00624)	–0.0275 (0.0351)	–0.0135 (0.0388)
GDP Per Capita Squared					0.00242 (0.00227)	0.000895 (0.00260)
Population			–0.00947** (0.00477)	–0.0108** (0.00524)	–0.0104* (0.00533)	–0.0184** (0.00723)
Regime Type			1.58e–05 (1.68e–05)	1.04e–06 (1.70e–05)	2.46e–06 (1.73e–05)	–9.87e–06 (1.72e–05)
Civil War Intensity			–0.000404 (0.00107)	–0.00131 (0.00109)	–0.00139 (0.00108)	–0.000395 (0.00106)
Urbanization				0.000904*** (0.000342)	0.000869*** (0.000333)	0.000543 (0.000353)
FDI (% GDP)				3.32e–05 (0.000171)	2.86e–05 (0.000168)	–0.000122 (0.000188)

(continued on next page)

Table 11 (continued)

Dependent Variable: Emigration Rate	Model 27	Model 28	Model 29	Model 30	Model 31	Model 32
Oil Rents (% GDP)				–0.000106 (0.000182)	–0.000124 (0.000185)	–0.000125 (0.000198)
Trade (% GDP)				4.96e–05 (5.31e–05)	5.54e–05 (5.54e–05)	2.23e–05 (6.07e–05)
OECD Terror Deaths						5.32e–05 (0.000287)
OECD GDP						0.0227*** (0.00767)
Ave. OECD Unemployment						–0.000358 (0.000838)
Observations	408	400	395	373	373	373
Number of Country	103	101	100	98	98	98
Country FE	No	No	No	No	No	No
Year FE	No	No	No	No	No	No

Table 12

Independent variables capture bilateral/multilateral aid projects intended to foster rural and urban development. This model matches Model 32, except that it includes a lagged dependent variable. Robust standard errors in parentheses, clustered by country. ***p < 0.01, **p < 0.05, *p < 0.1.

Dependent Variable: Emigration Rate	Model 33
Rural Dev. Aid (% GDP)	–1.309** (0.614)
Urban Dev. Aid (% GDP)	–0.905 (1.204)
All Other Aid (% GDP)	–0.0141 (0.0539)
GDP Per Capita	0.0303 (0.0482)
GDP Per Capita Squared	–0.00127 (0.00311)
Population	–0.0122** (0.00532)
Regime Type	1.52e–05 (2.16e–05)
Civil War Intensity	5.21e–05 (0.00144)
Urban Population	9.77e–05 (0.000330)
FDI (% GDP)	–8.65e–06 (0.000154)
Oil Rents (% GDP)	–0.000466*** (0.000221)
Trade (% GDP)	5.80e–05 (4.98e–05)
Lagged DV	0.138*** (0.0365)
OECD Terror Deaths	–0.000230 (0.000335)
OECD GDP	0.0180** (0.00788)
Ave. OECD Unemployment	–0.00110 (0.00109)
Observations	357
Number of Countries	98
Country FE	No
Year FE	No

Table 13

Instrumental variable models, with the second moment of the endogenous variable (Rural Aid (% GDP)) used in Model 34 and the third moment used in model 35. Robust standard errors in parentheses, clustered by country. ***p < 0.01, **p < 0.05, *p < 0.1.

Dependent Variable: Emigration Rate	Model 34	Model 35
Rural Dev. Aid (% GDP)	–0.984** (0.416)	–1.053** (0.450)
Urban Dev. Aid (% GDP)	–0.268 (1.166)	–0.280 (1.165)
All Other Aid (% GDP)	–0.0162 (0.0389)	–0.0153 (0.0389)
GDP Per Capita	0.0637 (0.0486)	0.0637 (0.0486)
GDP Per Capita Squared	–0.00478 (0.00330)	–0.00478 (0.00330)
Population	–0.0887** (0.0365)	–0.0887** (0.0365)
Regime Type	–1.85e–05 (1.95e–05)	–1.87e–05 (1.95e–05)
Civil War Intensity	–0.00161 (0.00114)	–0.00161 (0.00114)
Urbanization	0.00107* (0.000611)	0.00106* (0.000611)
FDI (% GDP)	–0.000191 (0.000193)	–0.000189 (0.000193)
Oil Rents (% GDP)	–6.40e–05 (0.000228)	–6.52e–05 (0.000228)
Trade (% GDP)	–5.39e–07 (6.65e–05)	–6.40e–07 (6.65e–05)
OECD Terror Deaths	–0.000227 (0.000293)	–0.000230 (0.000293)
OECD GDP	0.0572*** (0.0197)	0.0572*** (0.0197)
Ave OECD Unemployment	0.000596 (0.000913)	0.000592 (0.000915)
Observations	373	373
Number of Countries	98	98
Country FE	Yes	Yes
Year FE	Yes	Yes

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