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The Effect of Foreign Aid on Migration: Global Micro Evidence from World Bank Projects

Andreas Fuchs, Andre Groeger, Tobias Heidland and Lukas Wellner

ABSTRACT

THE EFFECT OF FOREIGN AID ON MIGRATION: GLOBAL MICRO EVIDENCE FROM WORLD BANK PROJECTS

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In response to surging immigration pressure in Europe and the United States, Western policymakers advocate foreign aid as a means to fight the `root causes' of irregular migration. This article provides the first global evidence of the effects of aid on migration preferences, migration flows, and possible underlying mechanisms, both in the short and longer term. We combine newly geocoded data on World Bank aid project allocation at the subnational level over the period 2008--2019 with exceptionally rich survey data from a sample of almost one million individuals across the entire developing world and data on migration and asylum seeker flows to high-income countries. Employing two distinct causal estimation strategies, we show that in the short term (after the announcement of a World Bank project and within two years after project disbursement), foreign aid improves individual expectations about the future and trust in national institutions in aid-receiving regions, which translate into reduced individual migration preferences and asylum-seeker flows. In the longer term (between three to five years after disbursement), foreign aid fosters improvements in individual welfare through poverty reduction and income increases, resulting in larger regular migration to high-income countries. Our findings show that aid can cause a short-lived reduction in migration aspirations, except in fragile Sub-Saharan African contexts where aid appears largely ineffective. In contrast, foreign aid enhances individual capabilities over the longer term, contributing to greater regular migration, consistent with the `mobility transition' theory.

Keywords: Foreign aid, World Bank, aid effectiveness, international migration, asylum seeking, migration preferences, Gallup World Poll

JEL classification: F22, F35, F53, H77, O15, O19

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1 Introduction

In response to surging immigration pressure from low- and middle-income countries (Hanson and McIntosh 2016), Europe and the United States promote foreign aid as a means to fight the 'root causes' of irregular migration from the Global South.[1] For example, during the 2015 Valletta Summit on Migration, leaders of the European Union agreed to establish the EU Emergency Trust Fund for Africa (EUTF), endowed with EUR 5 billion to address "the root causes of instability, forced displacement and irregular migration and to contribute to better migration management across the Sahel and Lake Chad, the Horn of Africa and North Africa." Similarly, in 2021, the United States' Biden-Harris administration presented its Strategy for Addressing the Root Causes of Migration in Central America. It announced more than US$ 240 million in new humanitarian and bilateral and regional assistance "to build hope for citizens in the region that the life they desire can be found at home" (National Security Council 2021, p.4). In contrast to this apparent consensus among Western policymakers regarding the effectiveness of foreign aid in curbing migration through development, the scientific evidence remains rather controversial (Qian 2015, Clemens and Postel 2018).

In this paper, we study the effects of foreign aid on migration and development over the period 2008–2019 by combining exceptionally rich data from the Gallup World Poll (GWP) on a sample of almost one million individuals living in 106 developing countries with georeferenced data on aid project allocation by the World Bank, the most important provider of international development finance. This dataset of unprecedented detail allows us to exploit variation in foreign aid allocation over time and within recipient countries to plausibly identify causal effects.

Equipped with these data, we implement two independent causal identification strategies that enable us to disentangle the (i) short-term announcement effect of a World Bank aid project, estimated by means of an event study, from the (ii) longer-term effect of local aid project disbursements, estimated using an instrumental variable approach. In the event study, we exploit the staggered roll-out of the GWP during approximately four consecutive weeks per country wave and match these interview dates with World Bank project announcement dates. Our analysis then compares individuals within a specific province interviewed just before the announcement of a project for their country to those interviewed just after the announcement. To identify the effect of aid project disbursements, in the instrumental variable approach, we exploit geolocated project-level disbursement schedules over time to measure the amount of aid a province receives over time. To tackle potential endogeneity concerns, we exploit plausibly exogenous variation in the timing of World Bank project implementation, which stems from the long time lag between the project commitment that determines the total amount of resources assigned and the later disbursement flows. We are the first to systematically document shifts in migration aspirations and flows due to foreign aid project allocation within recipient countries alongside their potential mechanisms across the entire developing world, both in the short and longer term.

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[1]In this paper, we use the term "foreign aid" in a broad sense, which includes Official Development Assistance (ODA) as defined by the OECD and other types of development finance, such as credit-financed development projects, provided by official agencies.

A good way of operationalizing the causal relationships between foreign aid and migration is the *aspiration-capability* framework (Sen 1999, Carling and Schewel 2018, La Ferrara 2019). The key idea is that individual migration aspirations can only translate into realized emigration if they are met with the respective capabilities.[2] We account for this by investigating the effect of aid on both migration *preferences* and *flows* and document systematically *where* aid translates into changes in migration aspirations and capabilities and *how* it affects migration flows. Moreover, we also carefully exploit the time dimension of this effect. In the short term, the announcement of aid projects may affect individuals' aspirations. In the longer term, aid may change both aspirations and capabilities through changes in life satisfaction as well as welfare outcomes, such as income, employment, or housing, which typically materialize only with a substantial lag.

Our results draw the following picture. In the short term, we find that, on average, a new World Bank aid project leads to a one percentage point reduction of individual migration preferences in the days following the project announcement in aid recipient countries. This effect coincides with individuals holding more optimistic expectations about their future and increased trust in national institutions. We also find this effect is more pronounced among young individuals, who are more likely to consider migration, and among those with internet access, arguably reflecting their better access to information.

This short-term reduction in migration preferences is persistent over the project implementation phase up to three years after the initial project disbursement. Our baseline estimate indicates a decrease in reported preferences by around 0.4 percentage points for the average annual aid disbursement at the province level worth US$ 11.6 million, which corresponds to a 1.7 percent reduction in migration preferences at the sample average. Consistent with the reduction in migration preferences, additional aid disbursements to recipient countries also translate into lower flows of asylum seekers to OECD countries within one to three years after the project disbursement. Our baseline estimate indicates an average decrease of around 8 percent in irregular migration flows to the OECD for the average annual World Bank disbursement of US$ 130 million at the country level. We find these negative effects to be heterogeneous across world regions with respect to their magnitude and persistence, and they are particularly pronounced in Latin America and the Middle East & North Africa. For Sub-Saharan Africa, the effect is confined to the subsample of non-fragile states, which is consistent with a lack of aid effectiveness in areas of limited statehood (Dreher et al. 2018).

In the longer term, however, within three to five years after the initial disbursement, the negative effects of aid on migration preferences and asylum seeker flows disappear, along with the improvements in individual expectations. Instead, we find that aid affects individual welfare positively, measured by reduced poverty and higher income per capita. Our baseline estimate indicates an increase in income per capita of 0.6 percent for the average annual disbursement at the province level. These welfare improvements then translate into increased flows of regular migration to OECD countries, which have a magnitude of 6–7 percent after four to five years.

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[2]Capabilities may include financial resources, human capital, social capital, physical capabilities (such as sufficient health), and regular or irregular immigration opportunities. Capabilities are thus considerably broader than financial means.

This can be interpreted as a simultaneous deterioration in aspirations about the place of residence with an increase in capabilities, which translates into larger regular migration flows. We find these effects to be driven by aid recipient countries in Latin America and the subsample of non-fragile countries in Sub-Saharan Africa.

One may be concerned that the disbursement results are confounded by factors affecting both aid inflows and migration, such as macroeconomic shocks or episodes of violent conflict. We address this potential endogeneity in four ways. First, in our baseline regression specification, we include country-year and province fixed effects such that identification comes exclusively from variations in aid receipts within provinces over time. Second, we follow Kraay (2012, 2014) and Andersen et al. (2022) and instrument disbursements using predetermined aid commitments, which are plausibly exogenous to contemporaneous shocks. Third, we augment the baseline specification with leads and lags of synthetic disbursements. Reassuringly, we find no differential trends in migration preferences during the months before aid disbursements. Finally, we conduct a range of falsification exercises randomizing aid disbursements over space and time and show that the effects we find are extremely unlikely to be generated by any spurious correlation.

Our results speak to the literature on the determinants of migration in general and that investigating the effects of foreign aid in particular. Increasing incomes in migrants' origin countries decrease the returns from emigration and thus makes it less attractive, creating a mechanism of considerable interest for Western policymakers who wish to curb migration inflows through foreign aid. In contrast, recent contributions posit that during the 'mobility transition,' emigration tends to increase with economic development until countries attain upper-middle income status and only then experience a decline in emigration rates (Dao et al. 2018). Consistent with this view, the existing literature finds that additional income in developing countries leads to *more* migration rather than *less* if migration is costly and credit constraints are binding (Clemens 2014, Angelucci 2015, Bazzi 2017). Apart from income, the lack of migration-relevant information can also present a barrier to migration (Böhme et al. 2020). In a paper closely related to ours, Adema et al. (2022) find that mobile internet access in developing countries increases the desire and plans to emigrate. We contribute to this literature by analyzing the causal effects of foreign aid on migration across the entire developing world. We provide novel evidence that foreign aid can have substantial effects on migration, which materialize both through changes in individual expectations and through individual welfare.

Regarding the literature on the effect of foreign aid on migration, there is no consensus with respect to the targeting of aid towards migration origins. Some studies find that donors systematically channel aid to source countries of migrants (Czaika and Mayer 2011, Bermeo and Leblang 2015), while others find no clear evidence that aid is distributed differently to major migration origin countries compared to other aid recipients (Clemens and Postel 2018). Regarding the effect of aid on migration, findings are also mixed.[3] Studies documenting negative effects of aid on migration typically find that the effects are small and restricted to certain forms of aid (Gamso and Yuldashev 2018, Lanati and Thiele 2018b,a). Negative effects are more likely if aid successfully improves local amenities (Dustmann and Okatenko 2014) or if aid

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[3]See Parsons and Winters (2014) for a review of the literature on migration, trade, and aid.

money buys concessions that shift recipient countries' migration policies (Dreher et al. 2019). In contrast, other studies document a positive association between foreign aid and emigration across developing countries (Berthélemy et al. 2009, Belloc 2015, Clemens and Postel 2018). For example, improved infrastructure could increase migration by lowering migration costs (Morten and Oliveira 2016). Part of these diverging results are likely determined by empirical work investigating specific forms of foreign aid, focusing on specific aid recipient countries or regions and specific time periods. We contribute to this literature by providing consistent global evidence from the same sample and approach that shows that negative and positive effects may be part of the same response to foreign aid. Our results suggest that negative effects occur in the short term, as a reaction to aid project announcements, and are driven by individuals adopting more positive expectations about the future and increased trust in national institutions. In contrast, positive effects unfold over the longer term, once aid becomes effective in increasing incomes.

Finally, our results also relate to the literature on the effectiveness of foreign aid for human development. There exists a long-standing theoretical and empirical dispute between optimists and critics that remains unresolved to date. The former argue that foreign aid may provide the necessary "big push" to help low- and middle-income countries overcome poverty traps and stimulate sustained positive development trajectories (Sachs et al. 2004). The latter argue that conventional aid is flawed in different ways that prevent it from achieving any positive human development goals or even leading to negative growth effects (Easterly 2003). Despite empirical evidence supporting positive effects (Clemens et al. 2012, Galiani et al. 2017, Chauvet and Ehrhart 2018), there is also evidence of unintended side effects of foreign aid, such as conflict escalation and deteriorating political institutions (Kersting and Kilby 2014, Nunn and Qian 2014, Bluhm et al. 2021), which might have important negative repercussions on human development. The effect of foreign aid on development must therefore be considered theoretically and empirically ambiguous.[4] We contribute to this literature by providing evidence on different short- and longer-term mechanisms underlying the effects of foreign aid on migration and development. In particular, we identify a novel short-term effect of foreign aid that causes improvements in individual expectations about the future and trust in national institutions in aid-receiving countries. In the longer term, we show with global individual-level data that foreign aid causes sizeable increases in income per capita and reductions in poverty incidence.

We proceed as follows. Section 2 provides a conceptual framework of how foreign aid can affect migration in the short and longer term. In Section 3, we introduce the different data sources used and provide descriptive statistics. Section 4 presents the empirical approach and results for the event study design examining the short-term effects of aid project announcements. In Section 5, we present the empirical approach and results for the instrumental variable strategy investigating the local longer-term effects of aid disbursement and project implementation. We conclude in Section 6.

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[4]For reviews on the aid effectiveness literature, see Doucouliagos and Paldam (2009, 2015) and Qian (2015).

2 Conceptual Framework

Policymakers' promises to increase foreign aid to developing countries are often accompanied by claims that helping these countries develop will discourage their populations to emigrate. At first glance, this seems intuitive: If aid is effective in creating more jobs, better education, access to health care, and higher quality public institutions at home, *all else equal*, prospective migrants should be less inclined to leave their country.

Empirical studies' findings and economic theory offers diverging predictions regarding the development-migration nexus. Some empirical studies find that poor households are more likely to migrate as they face lower opportunity costs of migration (Jayachandran 2006, Mueller et al. 2014, Mastrorillo et al. 2016). However, a short-term increase in income might also enable migration of individuals that were formerly facing financial constraints (Cattaneo and Peri 2016, Bazzi 2017, Clemens and Postel 2018, Cai 2020). Even a small amount of additional income can thus trigger migration if individuals are severely credit constrained and are too close to subsistence to take any income risks, even if they can potentially reap large returns (Bryan et al. 2014).

Regarding the effect of longer-term income growth on emigration, which is highly correlated with other improvements in development outcomes, there is not yet a scientific consensus (Clemens 2014, Benček and Schneiderheinze 2020, Czaika et al. 2021, Langella and Manning 2021). This is partly because the role of expectations and information in the migration decision-making process is still relatively poorly understood.[5] Information about the destination country can have ambiguous effects on migration. On the one hand, more information about a destination country might make this country appear more attractive as an ultimate destination and enable migrants to rely on existing networks (Dreher et al. 2019, Lanati and Thiele 2021). On the other hand, more information might create more realistic expectations about living conditions, including labor market access, and thus correct overestimated gains from migration downward (Bertoli et al. 2020, Tjaden and Dunsch 2021). This has important implications for the transmission mechanism of aid on migration decision-making. Furthermore, the most common migration models in economics, based on the neoclassical migration model, are highly simplistic when it comes to the motivation to migrate, thus overpredicting interest in emigration (see, e.g., Clemens 2022).

A useful model for understanding the relevant aspects of individuals' migration decision-making is the *aspirations-capabilities framework*, which splits up the migration decision into preferences and constraints.[6] The common approaches to model aspirations in economics is to assume that individuals draw utility from two separable sources: income and income relative to aspirations (Dalton et al. 2016). In the context of migration, it makes sense to widen the

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[5]Notable exceptions are Shrestha (2020) and Baseler (2023) who use an experimental approach to provide prospective individuals or their families with information about the risks and benefits of migration to assess the information channel.

[6]The framework was originally developed by qualitative social scientists (Carling 2002, Carling and Schewel 2018, De Haas 2021) and has recently found its way into the economics literature (Detlefsen et al. 2022).

focus to broader living conditions (see Detlefsen et al. 2022). If individuals feel they cannot achieve their aspirations locally, they will start considering migration (De Haas 2021), which can be best measured through migration aspirations. Aid can thus decrease migration aspirations if it improves local conditions (or the perception thereof) and thus makes it more likely that individuals think they can achieve their life aspirations without migrating.

Aspirations are different from expectations (La Ferrara 2019). While rational expectations and revealed choices account for constraints, aspirations can be seen as a measure of preferences that are not impacted by real-world constraints.[7] A preference measure can be treated as separate and as unaffected by capabilities if the agent follows what Dalton et al. (2016) and La Ferrara (2019) call a behavioral solution, i.e., when aspirations are not updated based on constraints. The survey question we use to elicit preferences in the empirical analysis below is hence formulated in a way that avoids the explicit incorporation of constraints.

To reflect the distinction between aspirations and capabilities, we conceptually separate our paper into two parts. In the first part of our paper, which analyzes the short-term effect of aid announcements, we will analyze migration aspirations, which we interchangeably call migration preferences. In the second part, we will extend our analysis to longer-term effects and consider actual migration flows as well, thus also incorporating capabilities. The announcement of aid might have an immediate effect on the preference to stay, for example, by causing individuals to update their expectations of the future. By contrast, we expect that any effect of aid on actual living conditions and thus on capabilities is likely to take longer. As a consequence, migration preferences might react immediately upon announcement. Any effect caused by lifting constraints that could then affect realized migration via capabilities takes longer. If one were to focus solely on migration as the revealed outcome, that distinction would not be possible and hence the resulting understanding of migration-decision making and aid's effects would be rather limited.

Aid projects can differ in their effects on migration aspirations and, in turn, migration flows, depending on the types of projects and the time horizon studied. Possible mechanisms are improved economic opportunities or living conditions. The latter include security, social protection, and, importantly, also improved health or education services, which are part of what has been called public amenities in the literature (see, e.g., Dustmann and Okatenko 2014). While perception can change rapidly when a new project is announced, the real effects, such as improved employment opportunities, may take longer.

In the short and medium term, aid projects can be expected to decrease migration aspirations by improving economic opportunities or living conditions and their perception. In the longer term, better education thanks to aid projects may increase individuals' or their parents' aspirations. This paper focuses on the short- and medium-term effects of aid on migration, so we expect this channel to be less relevant. Of course, projects might be ineffective at changing any of these relevant outcomes, either because they target completely different margins in the first place or because they fail to deliver an impact. Whether the effects via

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[7]In her paper, La Ferrara further distinguished aspirations from goals ("an objective, measurable target"), which she suggests are a lower-order variable than aspirations.

income or amenities are more effective in the short and medium run is an empirical question that depends on several factors, including the beneficiaries' utility function, the relative effectiveness of projects, and context.

In education-related approaches (La Ferrara 2019), low levels of aspirations, for example, due to a lack of positive role models, cause suboptimal effort. Policy recommendations have therefore rather focused on raising aspirations. This is different in the case of migration, where high emigration aspirations are seen as a problem by many destination-country policymakers. To protect domestic workers from outside competition, immigration to high-income countries is highly restricted. This results in a lack of capabilities to migrate legally for a majority of the population in poorer countries, even if they are able to pay for the direct costs of migration. As a consequence, people migrate irregularly and often take extremely high risks (Friebel et al. 2018, Bah et al. 2023). Lacking visa, these individuals often show up in the statistics as asylum seekers and make up a large part of those refused asylum. Reducing the asylum seeker flows, and the latter group in particular, is a key objective of the root causes strategy. We will therefore study not only regular migration, but also asylum seeker flows.

3 Data

3.1 Measuring Migration

We analyze both international migration preferences in developing countries and actual bilateral migration flows between developing countries and OECD countries. Separating migration preferences from actual flows allows us to study the effect of policies on individual aspirations to move abroad, independently of the major constraints that keep most people in low-income countries from migrating internationally. We then incorporate these constraints when we analyze realized migration flows.

To study international migration preferences, we use data from the Gallup World Poll (Gallup 2021). The GWP is an annually repeated cross-sectional survey, covering almost all countries worldwide, which provides data for more than 2.3 million individuals. For low- and middle-income countries, the dataset contains 1.5 million observations in total, i.e., an average of 115,000 individuals per year. The sampling is probability-based and representative of the national resident population of 15 years and older—with only few exceptions due to staff safety and scarcely populated or poorly accessible areas. Questions are standardized around the world for all respondents and asked in the respective national language. GWP interviewers conduct surveys by telephone where telephone coverage exceeds 80 percent using random digit dialing or nationally representative telephone number lists. In all other regions, they conduct face-to-face interviews based on random routes procedures at different times of the day. A typical survey collects data from 1,000 individuals, varying with country population size.[8] GWP

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[8]Telephone interviews usually take 30 minutes; face-to-face interviews usually take about one hour. For more information on the GWP survey method, see `https://news.gallup.com/poll/105226/world-poll-methodology.aspx` (last accessed 13 September 2023).

data are becoming widely used in economic research (e.g., Deaton 2008, 2018, Bjørnskov 2010, Kahneman and Deaton 2010, Stevenson and Wolfers 2013, Böhme et al. 2020, Guriev et al. 2022), including research on aid (Goldsmith et al. 2014, Wellner et al. 2023) and migration (Dustmann and Okatenko 2014, Bertoli and Ruyssen 2018, Dao et al. 2018, Böhme et al. 2020, Aksoy and Poutvaara 2021).

GWP comes with great precision in time and space. It contains information on the specific date when the survey was carried out.[9] It also contains within-country geographic information that allows us to match individuals to first subnational administrative (ADM1) regions from the Database of Global Administrative Area (GADM).[10] ADM1 regions correspond to provinces, states, oblasts, among others, in the respective country's institutional setup, but we call them "provinces" in the following for simplicity. We successfully mapped provinces from 126 out of 140 non-high income countries covered in the GWP (listed in Appendix Table A1). From these countries, we successfully mapped 2,025 out of a total of 2,280 provinces.[11]

What we aspire to is often shaped, at least implicitly, by the constraints we face. To measure (stated) migration preferences cleanly in a way unaffected by constraints, such as a lack of access to visas or finances, the survey question needs to be designed accordingly. In this article, we measure international migration preferences based on the following GWP question: "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" We code the answer as a binary indicator that takes a value of one if the individual responds with "Like to move to another country" and zero otherwise (i.e., "Like to continue living in this country," "(DK)," and "(Refused)"). This question inquires about an individual's preferences, providing a hypothetical scenario with the two clear options to move or to stay. The question has the advantage of clearly addressing the desirability of migration, irrespective of whether respondents view it as achievable or actively seek it (Carling 2019). A caveat is that the question clearly refers to *permanent* international migration. While the answer for those who indicate migration preferences is clear, it is unclear whether denying the question indicates the absence of migration preferences or the presence of migration preferences *with the intention to return.* As we thus measure migration preferences for leaving the country permanently, we obtain a lower bound since the variable ignores short-term migration aspirations with the intention to return.

Our sample covers the period from 2008 to 2019 as the variable is not available in earlier and more recent Gallup survey waves. About a quarter of the respondents in our sample (23.2%) express migration preferences. As the world map in Figure 1 shows, we observe substantial variation across space. Migration preferences are highest in Latin America (31.1%), followed by Sub-Saharan Africa (30.3%) and lowest in Asia (12.8%). At the country level, Sierra

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[9]We drop all 20,159 individuals with missing information on the exact interview date. This corresponds to 2% of all observations of our final sample.

[10]GWP provides within-country geographic variables (named *REGION_xxx*) that indicate the subnational region the respondent lives in. We use GADM version 2.8 to map the administrative areas of all countries.

[11]At times, GWP used a spatial identifier that was above the unit of ADM1 regions (but below the country level) or did not follow the GADM 2.8 structure, i.e., province names were ambiguous or did not match.

Leone (61.5%), Albania (58.8%), and Liberia (58.8%) rank highest, whereas Indonesia (2.3%), Thailand (3.3%), and Uzbekistan (3.9%) show the lowest share of people aspiring to migrate. We also observe significant variation over time (Appendix Figure A1). From 2008 to 2019, the share of respondents that are willing to migrate increased from 17.9% percent to 30.9%.

Figure 1 – Average migration preferences by ADM1 region, 2008–2019
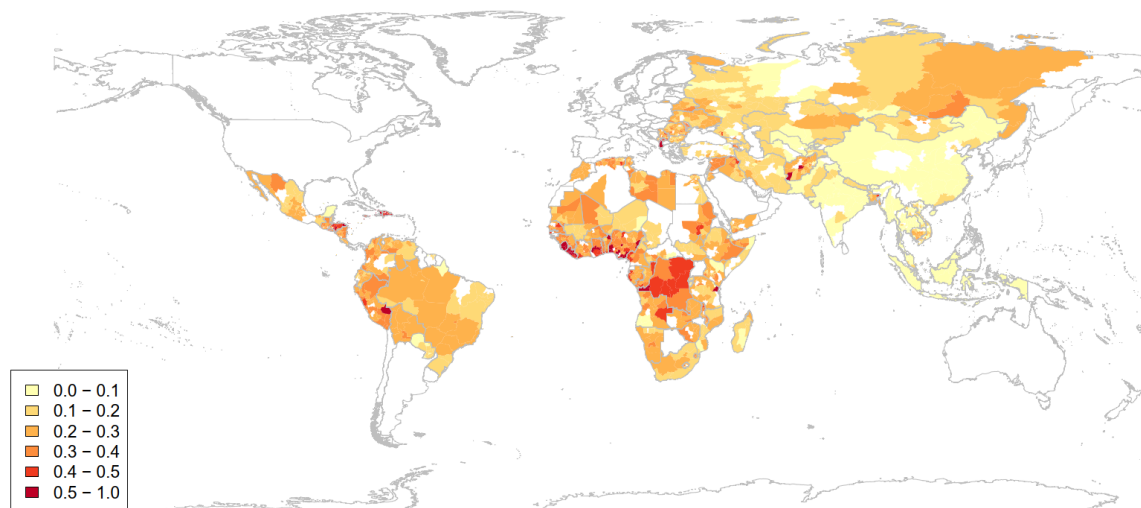
Notes: This figure shows the average share of interviewed individuals that indicate a preference to migrate by province (ADM1 region) between 2008 and 2019.

Appendix Table A2 provides the descriptive statistics for our final sample. 53.4% of the respondents are female. The average respondent's age is 38.5 years, and the average education level between 8 and 15 years. 37.4% live in an urban area, and 62.9% report to have a child.

Turning to actual migration flows, we rely on the OECD International Migration Database, which covers flow data from 158 countries of origin into 25 OECD countries from 2000 onward (OECD 2020).[12] Data include both economic migration and asylum seeker applications. The flow data originate typically from national population registers or national immigration offices.

Migration preferences correlate strongly with migration flows (Tjaden et al. 2019). Docquier et al. (2014) estimate the correlation between the average share of people who prefer to migrate internationally and the actual emigration rate in 138 countries of origin. In a linear regression, they estimate a coefficient for the less educated of 0.215 and for the college-educated of 0.942. This indicates that, among those individuals with access to finances and visa, there is almost a 1:1 elasticity between migration preferences and actual emigration ($R^2 = 0.97$), although many of those who report they want to migrate do not migrate in a given year due to constraints or changes in circumstances. Among the more constrained people with less education, a large share of the potential migrants become involuntarily immobile.

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[12]Since reliable worldwide annual bilateral migration data do not exist, we focus on OECD countries exclusively.

Migration preferences are also highly indicative of actual migration flows in the dataset we use (Appendix Table A3). A higher number of migrants migrates into OECD countries in country-year pairs with higher migration preferences.[13] This correlation becomes stronger when restricting the sample to individuals who express migration preferences to one of the OECD countries and when we only consider individuals who also express concrete migration preparations. At the dyadic level (again using migration preferences for specific OECD locations), we also observe a positive correlation between migration preferences into specific OECD countries and actual migration flows into the same OECD countries.

3.2 World Bank Project Data

The World Bank is the world's largest international financial institution and has the mission to reduce global poverty and promote sustainable development. It provides financial and technical assistance to developing countries for development projects and programs that range from education and healthcare to agriculture and mining. The World Bank consists of two main branches: the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD).[14] The IDA provides concessional loans and grants to the world's poorest countries, enabling them to undertake projects that may not be feasible through regular borrowing. The IBRD provides loans and financial resources to middle-income and more creditworthy low-income countries. Decision-making at the World Bank is guided by its Board of Governors and the Board of Directors. The Board of Governors, composed of representatives from each member country, is the highest decision-making body and typically meets once a year to discuss strategic issues. We focus on the Board of Directors, which meets regularly and is responsible for day-to-day operations, including the approval of World Bank projects. It consists of 25 Executive Directors who represent the member countries or groups of countries and make decisions on projects, policies, and strategies. The President of the World Bank serves as the head of the institution and oversees its overall operations.

We use project-level data on World Bank grants and loans from two data sources, AidData (2017) and the World Bank's Application Programming Interface (API).[15] Combined, these two data sets contain information on 6,728 projects, its implementing agency, project sector, and precise project location, which we geocode to the ADM1 level.[16]

In addition to the project location data, we use an updated version of the World Bank project-level disbursement data from Kersting and Kilby (2016). The data contain information

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[13]For this, we aggregate eq. (2), which we will introduce below, to the country-year level and create weighted means of all variables.

[14]We specifically focus on the World Bank and not the World Bank Group, which also includes the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), and the International Centre for Settlement of Investment Disputes (ICSID).

[15]We downloaded these data from the World Bank project-level website https://datacatalog.worldbank.org/search/dataset/0037800 on December 1st, 2020. Note that these data, including the geocoordinates, are no longer available on the website.

[16]We combine the two datasets by appending the additional information in the API dataset on the AidData dataset. In the resulting dataset, 3,357 projects (with 40,979 project locations) originate from the API; 3,371 projects (with 56,037 project locations) come from AidData. We only keep projects with a board approval date. Appendix Table A4 details how the World Bank categorizes project sectors.

on monthly commitments, disbursements, repayments, fees, and interest payments of the World Bank. From the previous dataset, we possess disbursement schedules for 4,495 projects, totaling a commitment value of US\$ 565 billion and disbursements amounting to US\$ 364 billion. The availability of disbursement schedules allows us to track the development of single projects over time.[17] Figure 2 shows the total amount disbursed through these World Bank projects by province for all countries in our sample over the 2008–2019 period. The largest recipients of World Bank funds are Brazil, China, and India, with substantial amounts also disbursed to Argentina, Bangladesh, Pakistan, and Vietnam. Appendix Figure A2 shows the disbursed amounts by country and sector over the sample period.

Figure 2 – World Bank disbursements by ADM1 region (in millions of US\$), 2008–2019
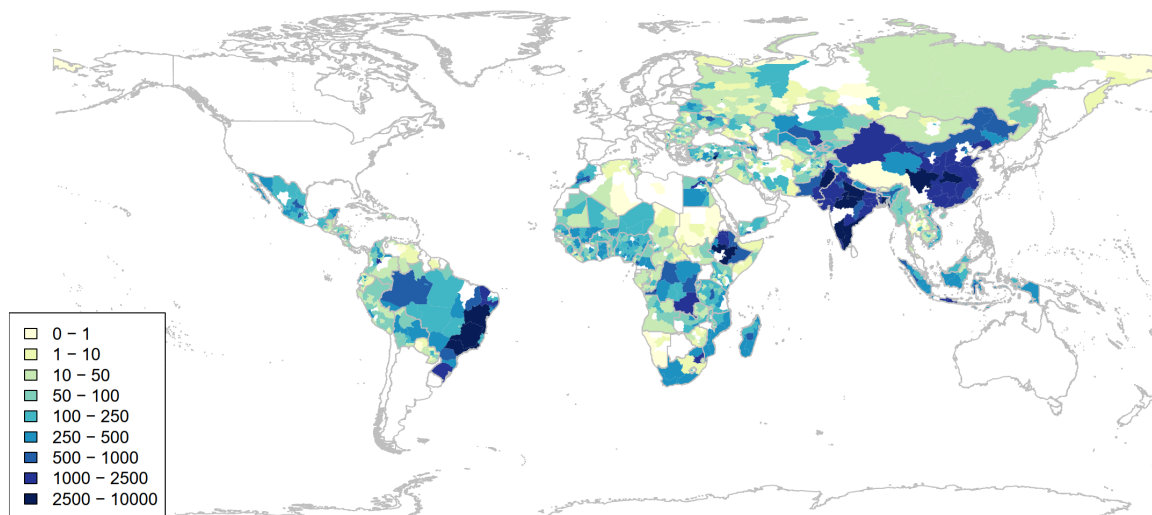
Notes: This figure shows total World Bank aid disbursements in million US\$ by province (ADM1 region) between 2008 and 2019.

4 Announcement Effects

4.1 Empirical Approach

To examine the short-term effects of World Bank project announcements on international migration preferences, we exploit information on the dates of project approvals by the World Bank's Board of Directors. Board approvals mark a central milestone in the progress of a World Bank project.[18] At this stage, the potential project has been identified, the required

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[17]To allocate amounts across project locations, we equally split the disbursed amounts over the respective number of project locations by project provinces (see, e.g., Dreher and Lohmann 2015, for a similar approach).

[18]At first sight, it might seem that World Bank project closure dates would be an alternative relevant date for our analysis. However, closing dates have a rather administrative character indicating a date six months after project completion. It is thus unlikely that they can affect migration preferences.

project documents (including financial plans, technical assessments, and environmental and social reports) have been drafted and the legal documents are being signed. In other words, the preparation phase ends and the implementation phase begins.[19]

We expect that the announcement of projects at the time of its approval affects individual migration decisions in aid recipient countries. For this to happen individuals in aid recipient countries need to (1) receive information about approved projects in due course and (2) change their migration calculus already at a time when the project's implementation phase is only about to begin and its completion might be years away.

Concerning (1), it is important to emphasize that board approvals are not only a standard administrative procedure, they are also accompanied by a substantial media coverage in the borrower country and elsewhere. Take the "Productive Partnerships in Agriculture Project" in Papua New Guinea as an example. The Board of Directors approved the project, which provides additional finance with the intention to improve yields, product quality, and ultimately the livelihoods of smallholder cocoa and coffee producers in the country, on Friday, February 28th, 2014. On the approval day, the World Bank issued a press release presenting the project and its benefits, followed by a blog post with footage from local farmers on March 1st, 2014. Already on the day following the approval decision, the news spread through the recipient country's national media, for example via the website of Papua New Guinea's commercial television channel EM TV.

We checked whether project coverage in recipient country news outlets in the days following the board approval is indeed common with two approaches. Using information collected by the Global Database of Events, Language, and Tone (GDELT) and Google news searches, we checked for a subset of projects whether we can find systematic media reporting. In a sample of 20 randomly selected World Bank projects, we were able to trace project-related coverage in the national media in the immediate days after the project event for five projects. Considering that the availability of English-language online newspapers limits this research, this is likely a lower bound. We thus decided to proceed with a more systematic analysis where we test whether board approvals lead to significantly higher World Bank coverage in recipient country media outlets in the day immediately following the board approval.

In the more rigorous approach to test whether news of the project approval travels into recipient countries, we use daily country-specific information on news reporting on the World Bank from the Global Flows of Political Information (GLOWIN) dataset (Parizek 2023), which is based on GDELT and covers 215 countries from 2018–2020.[20] We use these data to test whether World Bank board approval triggers media coverage on the World Bank in recipient countries. More precisely, we regress a binary variable indicating whether or not the World Bank was mentioned in the recipient countries' media on a binary variable measuring whether or not the World Bank approved a project in the same country on the previous day to allow the news

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[19]Figure A3 in the Appendix provides a detailed overview of the project life cycle.

[20]For each day in the sample, GLOWIN uses a random subset of all GDELT entries, conditional on being in the top 500 views of at least one country in the world, totalling to around 10,000–15,000 news articles per day. It then uses hand-coding and supervised machine learning to identify reporting on international organizations.

to be picked up by the media. Appendix Table B1 reports the results gradually introducing additional levels of fixed effects. Our results show a significant increase in World Bank media coverage in recipient country media in the day after World Bank board approvals. There is a 11.7% likelihood that the World Bank is mentioned in any of the analyzed media outlets in the data, and this likelihood is increased by about 21% in the day immediately after a board approval. We thus conclude that World Bank board approvals are indeed meaningful dates that receive attention from the public in recipient countries.

Turning to (2), there are reasons to believe that the announcement can immediately affect individual migration decisions in the recipient country, i.e., at the start of the project's implementation phase when completion might still take several years. As discussed by Czaika et al. (2021), migration preferences are shaped by aspirational gaps between *real* life circumstances and and *desired* life circumstances. If the desired life circumstances cannot be envisioned in the real circumstances, the individual desires for change. One way how this change can be implemented is through migration. Individuals who intend to migrate hope to decrease the gap between their current life circumstances and their aspirations by finding a better life in a different location. Hence, individual migration preferences are a trade-off between the expected gains from moving relative to the counterfactual scenario of staying. Any change in current standards of living—or expected changes in future standard of living—can alter this equilibrium. While the announcement of a single World Bank project is unlikely to bear immediate effects on populations in recipient countries, it can raise expectations that living conditions will improve in the future. This might change the underlying trade-off regarding the migration decision. When World Bank projects thus alter future perceptions, the announcement of a project might also have an immediate effect on migration preferences in recipient countries.

To estimate the short-term effects of aid announcements, we exploit the staggered roll-out of the GWP, which conducts specific country-wave interviews within a time frame of on average about four weeks. We match these survey windows with project-specific announcement (i.e., Board approval) dates implemented in the same country. This allows us to compare individuals interviewed before such an announcement date to individuals interviewed after the announcement date. Gallup World Poll interviews happen throughout the year and different countries are interviewed in different months of the same year.[21] Figure A4 shows the distribution of GWP interview dates by country of the exemplary year 2015, where interview dates are marked in light gray and interview dates after the announcement of an aid project in the country are marked blue. We only exploit variation between individuals of the same survey wave. The identifying assumption is that the timing of the World Bank announcements relative to the implementation of the GWP survey days is random, which is plausibly the case. There is no obvious reason why the interview dates of a U.S.-based private analytics company would systematically be related to the timing of decisions made by the World Bank's Board of Directors. Nevertheless, we take several measures to ensure that our control group (individuals interviewed just before an approval date) is comparable to our treatment group (individuals

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[21]The GWP is a quasi panel, which makes the usual difference-in-difference setup impossible as not all individuals are interviewed within the same time period.

interviewed just after an approval date).

First, we only compare respondents interviewed across similar space and time. In our strictest specification province-year-month fixed effects, we exploit variation across individuals of the same province and survey wave.

Second, while the allocation of individuals before and after the event is random, sampling methods could result in an uneven distribution of individuals around the announcement date. One obvious concern is that individuals interviewed in later stages of a country-year spell are systematically different from those interviewed in early stages. We thus conduct balancing tests with individual-level characteristics (gender, age, education level, binary variables for urban residence and parenthood) around the announcement dates and find that, overall, individuals in the treatment and control group are similar (Table B2). Individual characteristics are largely balanced across individuals interviewed before and after World Bank project announcements. The exception is the urban status of the respondent: on average, individuals interviewed after an announcement are more likely to live in rural areas. We thus control for urban residence (and the other listed individual-level characteristics) in all specifications below.

Third, we control for day-of-the-week-level confounders through fixed effects. Gallup interview and World Bank approval dates occur on all weekdays, however, with varying probability. Bank announcements are more likely on Tuesdays and Thursdays, while GWP interviews are more frequent on Saturdays.[22]

Fourth, we restrict the sample to individuals interviewed within 15 days before and after the World Bank approval date.[23] While this comes at the disadvantage of discarding a large share of the data, it further increases the comparability of our treatment and control group. Within the already strict provinces-year-month fixed effects, we now only compare individuals interviewed about two weeks before and after the announcement within the same month and province.

Based on these measures, it is arguably random if an individual is interviewed before or after project announcement, which allows us to interpret our results in a causal manner. Specifically, we estimate the following equation:

$$outcome_{ipcdy} = \beta post_{icdy} + \gamma X_{ipcdy} + \delta S_d + \zeta_{pcy} + \epsilon_{icpdy}, \tag{1}$$

where $outcome_{icdy}$ is our dependent variable being migration preferences or attitudes for individual i living in province p of country c interviewed on day d in year y. $post_{icdy}$ indicates whether or not an individual has been interviewed after a project event in the respondent's country.[24] X_{ipcdy} are individual-level control variables, which include a binary variable if the respondent is female, the respondent's age in years and its square, an education indicator, an urban area indicator, and whether or not the household has at least one child.[25] S_d represents a

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[22]See Figure A5 for the distribution of Gallup interview dates and Figure A6 for the distribution of World Bank board approval dates over time.

[23]We chose 15 days in our preferred specification as it roughly corresponds to half of the average survey length.

[24]Of the individuals in our final sample, 17.5% are treated as we report in Table A2.

[25]The education variable takes a value of one if the respondent has 1–8 years of schooling, a value of

binary variable for the day of the week. ζ_{pcy} denotes province×year-month-fixed effects. Finally, ϵ_{ipcdy} is the error term. We cluster standard errors at the country level.[26]

4.2   Results

Figure 3 presents the main results in an event study plot. It shows coefficients and 90 percent confidence intervals for interactions between the binary variable *Post* indicating whether the individual was interviewed after World Bank project announcement or not and 22 dummies for three-day periods covering 30 days (4 weeks) before and after the approval date. It is reassuring that we do not observe significant pre-trends. We find a significant decrease in migration preferences in the days after World Bank project approvals. Individuals are 1.9 percentage points less likely in the three days after project approval to express migration preferences than in the three days before project approval. This effect is sizable given the sample mean of 23.2%. The estimated effect remains negative with varying precision of the estimates throughout the entire month after project announcement.[27]

In Table 1, we estimate eq. (1) with a step-wise increasing number of controls. As indicated in the table, we start with only year fixed effects in column 1 and end with province-year-month fixed effects in column 4. Finally, in our preferred specification in column 5, we use the reduced sample with 15-day event windows around project announcements. Throughout, results show a consistent and statistically significant negative effect of World Bank announcements on migration preferences. Individuals interviewed after a project announcement are 0.8 percentage points less likely to express migration preferences. In light of the sample mean of 20.3%, this effect is sizeable. These results indicate a substantial and immediate negative effect of aid project announcements on preferences for international migration.

To understand whether this effect occurs locally or across the country, we analyze province-level effects in Appendix Table B9. For this, we interact the treatment variable with a binary variable taking the value one if the project is approved for a specific province. "Post×province" thus indicates the additional effect of a project announcement in the project province compared to the overall country effect. We do not find a significantly different impact of project announcements on migration preferences in the project province compared to other provinces. The announcement effect reducing respondents' preferences for international migration is thus not specific to the province where the project is implemented.[28]

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two for 8–15 years, and a value of three for 15 years or more. The urban area indicator defines if the respondent lives in a rural area (defined as rural area, village, or small town) or urban area (suburb of a large city or large city.) 53% of the respondents are female. The average respondent has an age of 39 years and an education level of 8–15 years. 37% live in an urban neighbourhood, and 63% report to have at least one child.

[26]As we show below, our results are robust against a variety of different levels of clustering standard errors.

[27]Note that the number of observations decreases mechanically when moving further away from the event, as the average survey wave length is 26 days, which explains the increase in the size of the standard errors.

[28]We further test whether the effect differs on the type of project announced. As we show in Appendix Table B10, the effect does not differ across IDA or IBRD projects, nor does it increase with the committed financial size of the project.

Figure 3 – Migration preferences and World Bank announcements, event study plot
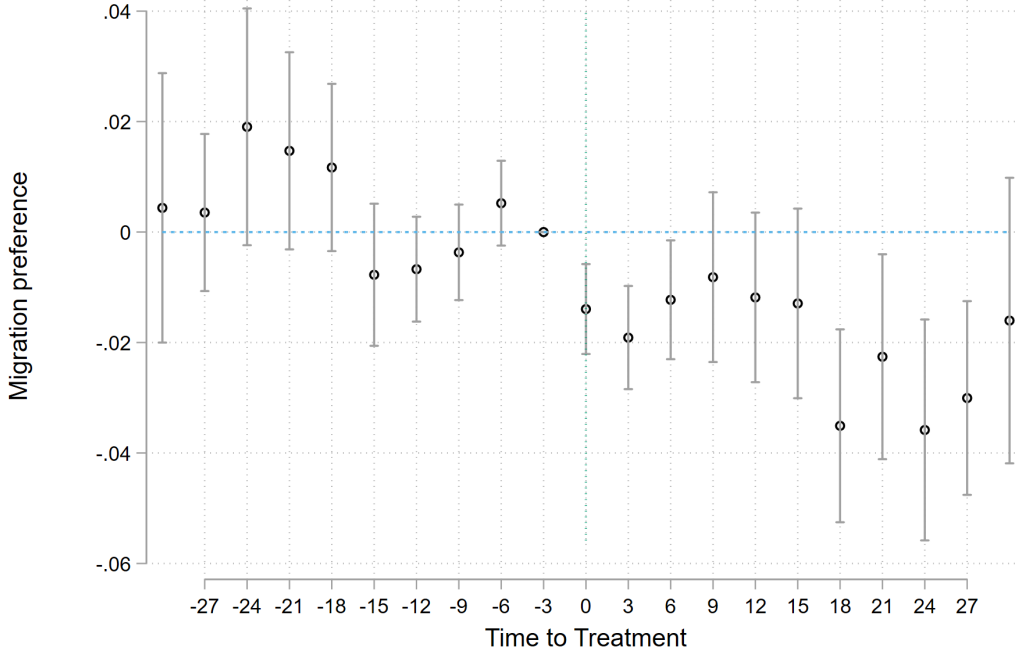
Notes: This figure plots the coefficients and 90 percent confidence intervals for a regression based on eq. (1) where we augment the specification with interactions between the binary variable indicating whether the individual was interviewed after World Bank project approval or not and 22 dummies for 3-day periods covering 30 days (4 weeks) before and after the approval date. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" Standard errors are clustered at the country level.

We test the robustness of the results in several ways. First, we run a randomization inference test based on 999 Monte Carlo replications to show that our effect is not driven by any underlying features of our data structure that our control variables and fixed effects might not account for. We do this in a two-step-procedure. In the first step, we draw at random a number of country-year waves from the entire population of country-year waves of the GWP data. This simulates the random coincidence of GWP interviews and World Bank board approvals. We draw 265 country-year waves as this corresponds to the total number of treated waves in the baseline.[29] In the second step, we draw one random date as placebo treatment date for each of these 265 survey waves and divide the sample into treatment (post event) and control (pre event). We then run eq. (1) with these random events and conduct a randomization inference test based on 999 Monte Carlo replications. Appendix Figure B1 displays the distribution of the 999 coefficients, which center around zero. The baseline estimate from column 6 of Table 1 is shown by the dashed vertical line. The p-value of 3.6 percent is calculated as the proportion of times that the absolute value of the t-statistic in the simulated data exceeds the absolute value of the

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[29]Placebo survey waves can thus include both country-year waves that are treated and non-treated in the baseline.

Table 1 – Migration preferences and World Bank announcements

	(1)	(2)	(3)	(4)	(5)
			Migration preferences		
Post	-0.05880***	-0.05601***	-0.00867*	-0.00939**	-0.00811**
	(0.01834)	(0.01543)	(0.00488)	(0.00365)	(0.00382)
Observations	952713	952713	952713	952336	172112
Individual controls	.	✓	✓	✓	✓
Country-year FE	.	.	✓	✓	✓
Day-of-the-week FE	.	.	✓	✓	✓
Year-month FE	.	.	✓	✓	✓
Province-year-month FE	.	.	.	✓	✓
15-day-window	.	.	.	.	✓
Mean DV	0.232	0.232	0.232	0.232	0.203

Notes: This table presents the results from eq. (1). Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Post" is a dummy if the respondent was interviewed after the board approval of a World Bank project that will be implemented in the respondent's country. Individual-level controls include gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

original t-statistic. The results of this randomization test show that it is very unlikely that any omitted variables correlate with our World Bank project announcement variable in a way that would spuriously produce our main results.

Second, we show that our results are robust when altering the number of days we include in the window around the event. Our conclusions do not hinge on our choice of the length of the window as regression results for alternative event windows of 5, 10, 20, and 30 days show (Appendix Table B3). It is particularly reassuring that our results remain robust even when reducing the event window to 5 days around the event. We judge it as very unlikely that once we control for our set of control variables and fixed effects, other events could drive our results in a systematic manner or that our results are driven by sample composition mechanics within such a short time frame of only 10 days. What is more, our results remain robust when leaving out the event date (and the day before and/or after the event date) from our analysis (Appendix Table B4). Our results even become stronger, which is not surprising given that we cannot rule out that the news of a new World Bank project needs time to spread in the recipient country population.

Third, we check that our results are not driven by our decision to use individual-level data. We prefer to run our regressions on the individual level, as this allows us to fully exploit both individual-level information for our treatment and control variables, the individual-level heterogeneities, as well as the temporal variation of the data with precise interview dates for our fixed effects and pre-trend analysis. One concern with this approach might be that the large number of observations artificially inflates the standard errors in our estimations. To address this concern, we show that our results are robust when aggregating the individual-level data to the country level, creating country-year averages for the period before and after the

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project announcement.[30] Our results are similar when using these aggregates instead of the individual-level data (Appendix Table B5).

Fourth, our baseline results are also robust to using an alternative outcome variable from the GWP, asking individuals "In the next 12 months, are you likely or unlikely to move away from the city or area where you live?" Since this question does not explicitly ask for *international* migration, it covers internal migration as well. Results remain very similar in magnitude and significance (Appendix Table B6). We further test if aid announcements affect individual-level capabilities to migrate. Following our argument, we do not expect aid announcements to change individual-level capabilities to migrate, as these announcements come with no immediate material benefits in recipient countries. To test this, we exchange the outcome variable to migration plans based on the question "Are you planning to move permanently to that country in the next 12 months, or not?" and migration preparations based on the question "Have you done any preparation for this move?"[31] As we show in Appendix Table B7, there is no systematic effect of aid announcements on migration plans and preparations after project approval.

Finally, results are robust to changing the level at which standard errors are clustered to the level of provinces, provinces and countries, countries and dates, and to country×dates Appendix (Table B8).

4.3 Mechanisms

It is unlikely that World Bank board approvals have any immediate impact on the individual's income, job, and well-being as any project-related disbursement typically only occurs several months after the decision. However, project announcements immediately provide respondents with new information that might affect how they assess the expected *future* relative benefits of staying versus migrating. To better understand the mechanisms behind the project announcement effect, we now analyze key effect heterogeneities and possible mediating variables.

We start with effect heterogeneities. We expect the effects of aid on migration preferences to be stronger among individuals who are more likely to benefit from these projects, in particular among younger individuals where future benefits of aid projects enter with a longer expected time horizon. In addition, we expect these effects to be stronger among individuals who are more likely to be exposed to national and local news. To test both hypotheses, we interact the *Post* dummy in eq. (1) with individual-level characteristics. Table 2 shows that as expected, the announcement effect is significantly stronger for individuals under the age of 30 and those with access to the internet. We do not find significantly different effects across gender, households with a family member abroad, or individuals who are unemployed.

We now turn to the suggested mediating variable and test whether aid announcements lead to expected improvements of future living conditions in the country of origin. For this, we

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[30]This forces us to alter the survey controls we use. We drop day-of-the-week fixed effects since we aggregate the data across different dates to the pre- and post-treatment period. To control for interview month, we take the month of the fist interview pre-treatment, and month of the treatment for the post-treatment period.

[31]Note that these questions were only asked once the respondent indicated migration preferences.

Table 2 – Migration preferences and World Bank announcements, individual-level heterogeneities

	(1)	(2)	(3)	(4)	(5)
	Female	Under 30	Internet access	Member abroad	Unemployed
Post	-0.00582	-0.00091	-0.00415	-0.00976	-0.00915**
	(0.00469)	(0.00480)	(0.00417)	(0.00694)	(0.00394)
Characteristic	-0.04353***	0.00791**	0.03858***	0.12640***	0.07719***
	(0.00444)	(0.00347)	(0.00404)	(0.00976)	(0.00523)
Interaction	-0.00701	-0.02038**	-0.01749***	-0.00804	0.00054
	(0.00769)	(0.00904)	(0.00646)	(0.01458)	(0.00987)
Observations	952336	952336	942836	104936	909862
Mean DV	0.232	0.232	0.232	0.218	0.234

Notes: This table presents the results from eq. (1), where we interact the independent variable and the instrument with individual-level characteristics as indicated in column titles. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Post" indicates a dummy if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, whether or not the household has a child as well as province-year-month fixed effects and day-of-the-week fixed effects. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

use two variables from the GWP that measure the individual's perception of their life today and their life in the future. 'Life today' asks the respondents to imagine a ladder with steps numbered from 0 at the bottom to 10 at the top and indicate on which ladder they feel like standing today. The top of the ladder represents the best possible life and the bottom of the ladder means the worst possible life. The second question, 'Life in the future', asks which step of the ladder the respondents think they will stand on in five years. We use these two variables in three different ways to ensure that definitions do not drive our results. First, we create a binary variable indicating that the respondent thinks life in the future will be better than today. Second, we calculate the difference between the two variables subtracting life today from life in the future. Third, we use life in the future as the outcome variable, controlling for life today.[32]

Figure 4 shows the results in an event study plot. Again, this figure plots coefficients and 90 percent confidence intervals for interactions between the binary variable that indicates whether the individual was interviewed before or after World Bank project announcement and 22 dummies for three-day periods included between 30 days (4 weeks) before and after the approval date. While we do not observe significant pre-trends, there is a significant increase in the respondent's perception of the future in the days after World Bank project approvals.

We present the detailed results in Table 3. We find a strong positive effect of World Bank project announcements on individual perceptions of the future. While this effect is strongest for the relative measure in columns 3 and 4, it persists when controlling for perceptions of life today in columns 5 and 6. In line with our argument, project announcements give citizens a more

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[32]The descriptive statistics on these variables are also provided in Table A2.

Figure 4 – Perceptions of the future and World Bank announcements, event study plot
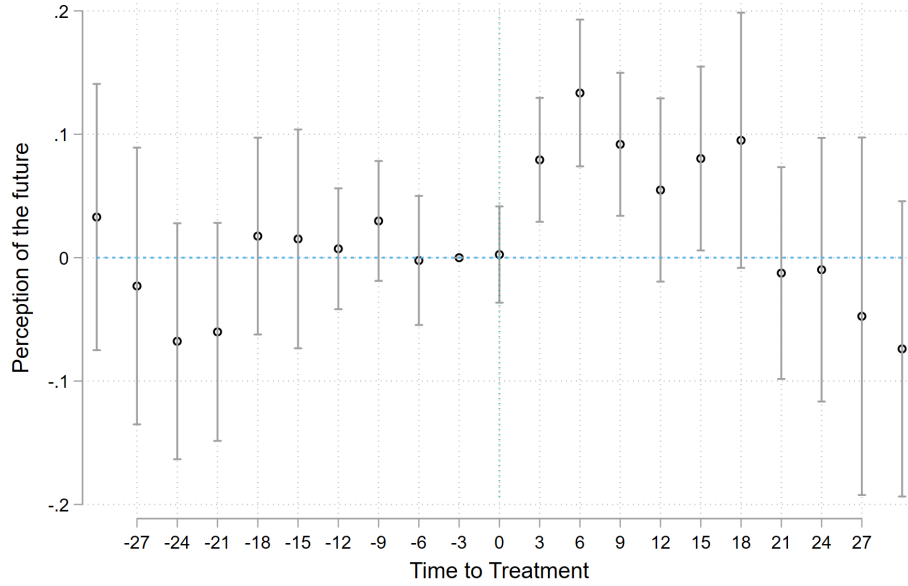
Notes: This figure plots the coefficients and 90 percent confidence intervals for a regression based on eq. (1) where we augment the specification with interactions between the binary variable indicating indicating whether the individual was interviewed after World Bank project board approval or not and 22 dummies for 3-day period included between 30 days (4 weeks) before and after the approval date. Outcome variable is how the individual perceives her life in the future relative to her life today. Standard errors are clustered at the country level.

optimistic outlook of the future, while at the same time decreasing the number of individuals expressing migration preferences.

Finally, we test if the effect of project announcements on migration preferences runs *through* perceptions of the future. As we argue, the only possible channel on how aid announcement can alter migration preferences in recipient countries in the days immediately following the project announcement is by improving perceptions of the future. We thus take project announcement as an instrument in a 2SLS regression of migration preferences on perceptions of the future. As we show in Table B11, there is a significant positive effect of an improvement of the perception of the future (instrumented by project announcement) on migration preferences.[33]

We see three main takeaways from the analysis of information flows and mechanisms. First, individuals in recipient countries seem to be aware of aid announcements. Second, they seem to expect a positive effect of aid projects on local opportunities in the future. Third, when forming a preference for migration (or not), they consider these future opportunities created by aid projects and are less likely to develop migration aspirations when projects in their country are announced. In what follows, we investigate whether and how these short-term effects evolve over time once aid projects are being implemented.

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[33]Since the instrument does not achieve the standard levels of the F-statistic, we must be cautious in interpreting these results.

Table 3 – World Bank announcements and perceptions of the future

	(1)	(2)	(3)	(4)	(5)	(6)
	Future better		Relative future		Life in the future	
Post country	0.01491***	0.01402**	0.06184***	0.05893***	0.03576*	0.03232*
	(0.00564)	(0.00554)	(0.02283)	(0.02227)	(0.01898)	(0.01851)
Observations	853422	154041	853422	154041	853422	154041
Individual controls	✓	✓	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓	✓	✓
Day-of-the-week FE	✓	✓	✓	✓	✓	✓
Year-month FE	✓	✓	✓	✓	✓	✓
Province-year-month FE	✓	✓	✓	✓	✓	✓
15-day-window	.	✓	.	✓	.	✓
Life today	.	.	.	.	✓	✓
Mean DV	0.710	0.738	1.618	1.669	6.623	6.592

Notes: This table presents the results from eq. (1), where we change the outcome variable to perceptions of the future. For this, we use the questions on perceptions of the respondent's life today ("Please imagine a ladder with steps numbered from 0 at the bottom to 10 at the top. Suppose we say that the top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time, assuming that the higher the step the better you feel about your life, and the lower the step the worse you feel about it? Which step comes closest to the way you feel?") and the respondent's life in the future (…"On which step of the ladder would you say you will stand on in the future, say about 5 years from now?") Columns 1 and 2 use a dummy variable indicating if life in the future is expected to be better than life today, columns 3 and 4 use the difference between life in the future and today, and columns 5 and 6 use life in the future as outcome, controlling for life today. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** p$<$0.01, ** p$<$0.05, * p$<$0.1.

5 Disbursement Effects

5.1 Empirical Approach

We now move from World Bank project announcements to World Bank disbursements. Announcements constitute national events that are echoed in the recipient country media, which is consumed by its population, in particular the among young and well-informed individuals. We argue that the receipt of this news increases individual perceptions about the future and consequently reduces demand for migration. At project approval, however, relatively little concrete information is spread about the project details, and even less is known about the implementation and the expected outcomes of these projects.

As projects advance to the implementation stage, more information becomes available to individuals in vicinity of project sites. Every month, the World Bank transfers money into specific locations in the recipient country, and with this potentially increases local demand for goods, jobs, and services. With our data, we can precisely measure the timing of these financial flows for each World Bank project and, therefore, the implementation of aid on the ground. In contrast to project announcements, project disbursements are not isolated events,

but occur in regular frequency throughout project life cycle, which is why we exploit in this part the intensive margin of disbursements by regressing our individual-level migration preferences variable on georeferenced World Bank disbursements at the province-year level. We estimate the following estimation equation:

$$migration_{ipcmy} = \beta aid_{pcmy} + \delta X_{ipcmy} + \zeta_{cy} + \eta_p + \epsilon_{ipcmy}, \qquad (2)$$

where $migration_{ipcmy}$ represents different outcomes capturing migration preferences and potential mechanisms for individual i living in province p of country c in month m of year y. aid_{pcmy} is our variable of interest, World Bank aid disbursements in millions of constant 2014 US dollars in a given province p of country c in the month before the interview month m in year y. As described in Section 3, we follow Kersting and Kilby (2016) and construct province-level World Bank aid disbursements by aggregating the project-level amount disbursed over time following the exact project-level disbursement schedules. The availability of monthly observations allows us to aggregate our disbursement measure at any frequency down to the month prior to each individual's GWP interview date.[34] X_{ipcmy} are the same individual-level control variables as in eq. (1). ζ_{cy} denotes country-year fixed effects, and η_p denotes province fixed effects. ϵ_{ipcmy} is the error term. In our preferred specification, we cluster standard errors at the country level, but show robustness of our results to alternative levels of clustering.

Exploiting province-level variation in aid disbursements over time allows us to rely on a tight set of fixed effects which absorb any potential confounding variables at the country-year level (e.g., macroeconomic shocks, national conflicts, or changes in migration policies) and time-invariant factors at the level of each recipient province within a given country (e.g., geography, availability of natural resources, or the aggregate level of development). This accounts for a wide range of potential confounders and represents a clear advantage over most of the empirical approaches used in the existing literature on the topic that have typically relied upon country-year variations in foreign aid allocation.

Nonetheless, there are remaining threats to identification to consider. These include time-varying factors at the province level if these factors are correlated with both changes of aid disbursements and migration simultaneously. This could be the case with provincial conflict episodes and subsequent reconstruction efforts, local development interventions, or *precisely* when donors target specific provinces due to increasing emigration rates. This may introduce an omitted variable bias when estimating equation eq. (2).

To address such endogeneity concerns, we implement an instrumental variable strategy motivated by recent contributions of Kraay (2012, 2014) and Andersen et al. (2022). Our instrument exploits variation in the time lag between the commitment and the disbursement of World Bank projects. More precisely, we construct *synthetic* disbursement schedules by interacting the initial commitment value of each project at approval with the average disbursement share of all projects from the same sector and same world region. Using synthetic disbursements to instrument for actual disbursements provides plausibly exogenous variation in the amount of project funding inflows over time since the former are, by construction, unaffected

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[34]Table A2 provides the descriptive statistics on these disbursements.

by province-time-specific confounders as discussed above.

Some institutional background helps to understand the reasoning behind this instrumental variable strategy. World Bank lending is organized by project. Individual projects are designed and set up following a consultation process with the borrower (see Figure A3 for the typical project life cycle). The borrower and the World Bank then conclude an agreement on the envisioned amount of spending and set up a loan agreement that fixes the lending conditions, including the committed financial amount, the terms and conditions of the loan, as well as the intended disbursement plan. A typical project takes several years from the board approval date to the last disbursement and completion of the project.

Unsurprisingly, not every World Bank project is disbursed as initially planned. Project disbursements are subject to World Bank staff discretion, project progress, technical and procurement issues, borrower performance, or any shock in the recipient country. For example, Kersting and Kilby (2016) show evidence of faster disbursement of World Bank investment project loans when countries are politically aligned with the United States and this effect becomes even stronger before competitive executive elections. All this can create substantial deviations in actual disbursements from the planned disbursement laid out at project approval. The instrumental variable approach we implement follows the idea that, while the project design at approval might be correlated with *past* and *contemporaneous* shocks in the recipient country or province, the instrumental variable is uncorrelated with *future* shocks unknown at the time of approval. In other words, if project disbursements follow the initial disbursement plan set up at approval, then fluctuations in disbursements on projects approved in previous years will be uncorrelated with contemporaneous shocks.

Data on planned project disbursement schedules at the time of project approval are not publicly available. In the absence of such information, for each World Bank project, we create *synthetic* disbursement schedules based on comparable projects. We define *comparable* projects as those implemented in the same sector and world region and create synthetic disbursement schedules based on the average schedules of the sample of comparable projects.[35] For each project, this provides us with an average disbursement schedule that indicates the monthly disbursement share from project approval to the last disbursement.[36] We then multiply the initial loan commitments with these average loan disbursement shares to create synthetic disbursements. Finally, we aggregate the synthetic disbursements to the province-month-year level to match them with the GWP data.

Conditional on eq. (2), synthetic disbursements are thus uncorrelated with the error term

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[35]We only include projects with available information on the project location and projects where a significant part of the initial commitment is disbursed (≥ 50 percent). Project sectors follow the sector II definitions as presented in Table A4. World regions follow the World Bank categorization: East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, North America, South Asia, and Sub-Saharan Africa. We show robustness to calculating average disbursement schedules leaving out projects from the province or country of the project.

[36]Figure C1 shows the uniform average disbursement pattern for all projects, as well as the sector specific disbursement pattern. We exclude disbursements made in the commitment year as they may potentially be endogenous to anticipated shocks at project approval date. With respect to the spatial distribution of aid disbursements for multi-location projects, we calculate average disbursements by project location by dividing total disbursements per project and time by the number of project locations.

and hence satisfy the exclusion restriction. Consequently, our baseline approach uses synthetic disbursements in a Two-Stage-Least Squares (2SLS) regression framework, replacing aid_{cpmy} in eq. (2) with $\widehat{aid}_{pcmy}$, based on the following first-stage regression:

$$aid_{pcmy} = \beta \widehat{aid}_{pcmy} + \delta_{ipcmy} + \zeta_{cy} + \eta_p + \epsilon_{ipcmy}, \tag{3}$$

where $\widehat{aid}_{pcmy}$ denotes the sum of all synthetic disbursements of World Bank aid in province p of country c in the month before interview month m of year y. We thus compare outcomes across individuals of different provinces within a country receiving different amounts of World Bank aid over time, during the month(s) prior to the interview.

5.2 Migration Preferences

We begin by analyzing the aggregate effect of World Bank aid disbursements in the month before the interview on migration preferences based on an estimation of eq. (2) on the full sample of 952,713 individual observations from the GWP. The baseline results are reported in Table 4. Panel A provides the OLS results with columns 1 through 5 reflecting different variations of the estimation equation including individual controls and an increasingly tight set of fixed effects, with the final column being our preferred specification. From left to right, the OLS results show statistically significant negative point estimates (columns 1–3), which turn zero in our preferred specification (column 5).

Given the risk that the simple OLS estimates could be affected by an omitted variable bias, in what follows, we focus on the estimations from our instrumental variable approach. In the first stage (panel B), the coefficient of the instrumental variable is positive as expected and highly statistically significant. Depending on the specification, a one dollar increase in synthetic disbursements translates into a 88.9–98.6 US cent increase in actual disbursements. The second-stage results are reported in panel C. The first-stage F-statistic reaches a value of between 54 and 340, signaling that the instrumental variable is highly relevant in the given context. The point estimate for our outcome of interest—migration preferences—is negative and highly significant, providing evidence that aid reduces migration preferences at the provincial level. The point estimate in our preferred specification in column 5 indicates a decrease of 2.7 percentage points for an increase in foreign aid receipts to the specific province worth 10 million US\$. Comparing the point estimates in column 5 between the OLS specification (panel A) and the IV second stage (panel C) suggests that the OLS coefficient is biased upwards. This would occur if omitted variables were positively correlated with both migration preferences and aid disbursements at the same time. This is a plausible scenario in the case of provincial economic shocks and natural or man-made disasters, which would typically be spurring migration and aid inflows to the affected province simultaneously. We are hence confident that the IV approach is successful in tackling this endogeneity problem and that the baseline results provide evidence of a negative short-term causal effect of foreign aid on migration preferences.

We repeat this analysis for longer-term lags of aid disbursements between 1 to 5 years to explore the dynamics of this effect over time. To be precise, Table 5 replaces our right-hand side

Table 4 – Migration preferences and World Bank disbursements

	(1)	(2)	(3)	(4)	(5)
			Migration preferences		
Panel A: OLS					
Disbursements	-0.00241**	-0.00231**	-0.00233**	-0.00012	0.00001
	(0.00105)	(0.00093)	(0.00092)	(0.00014)	(0.00010)
Panel B: First stage					
Synthetic disbursements	0.88936***	0.88973***	0.89530***	0.88978***	0.98580***
	(0.04904)	(0.04873)	(0.04857)	(0.05927)	(0.13441)
Panel C: Second stage					
Disbursements	-0.00976***	-0.00923***	-0.00860***	-0.00112*	-0.00268***
	(0.00297)	(0.00265)	(0.00243)	(0.00058)	(0.00073)
Observations	952713	952713	952713	952713	952713
Individual controls	.	✓	✓	✓	✓
Year FE	.	.	✓	✓	✓
Country FE	.	.	.	✓	✓
Country-year FE	.	.	.	.	✓
Province FE	.	.	.	.	✓
Mean DV	0.232	0.232	0.232	0.232	0.232
F-stat	328.9	333.3	339.8	225.4	53.8

Notes: This table presents the results from eq. (2). Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Disbursements" measures aggregated World Bank financial amounts disbursed in the month prior to the interview month in million, constant 2014 US\$ following project level disbursements over time. This variable is the outcome variable in Panel B ("First stage"). "Synthetic disbursements" are aggregated, synthetic project level disbursements in million, constant 2014 US\$ based on disbursement schedules of projects in the same sector and world region. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

variable of interest, aid disbursements in the month prior to the interview date, by cumulative disbursements in the 12 months preceding the interview date (column 1) and its first, second, third, and fourth lag, respectively (columns 2–5). The point estimate with the first yearly lag of disbursements in column 1 is again negative and highly significant, with the magnitude being somewhat larger than the one implied by the one-month lag.[37] Our baseline results indicate a decrease in migration preferences of between 0.3 to 0.4 percentage points for the average annual World Bank disbursement worth 11.6 million US\$ at the subnational province level. [38] Comparing the coefficient across columns shows that the effect is most pronounced during the second year after the initial aid disbursement. Analyzing longer lags, we still observe negative and statistically significant estimates, but their magnitudes are decreasing (column 2–3) and become indistinguishable from zero in the fourth year after disbursement. Taken together, these results suggest that the short-term negative effect of aid project announcements on migration

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[37]To compare this coefficient to the one from the monthly specification reported in Table 4, we divide it by 12 (months). This yields an implied coefficient of -0.00022.

[38]For the coefficient in column 2: $0.00034 \times 11.6 = 0.0039$.

preferences also occur with disbursements and are persistent up to three years, but disappear in the longer run.

Table 5 – Migration preferences and World Bank disbursements, longer-term effects

	(1)	(2)	(3)	(4)	(5)
			Migration preferences		
Months	**0-12**	**13-24**	**25-36**	**37-48**	**49-60**
Disbursements	-0.00029***	-0.00034***	-0.00023*	-0.00007	0.00002
	(0.00007)	(0.00010)	(0.00012)	(0.00009)	(0.00008)
Observations	952713	952713	952713	952713	952713
Individual controls	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓	✓
Province FE	✓	✓	✓	✓	✓
Mean DV	0.232	0.232	0.232	0.232	0.232
F-stat	129.5	61.0	62.6	50.5	25.4

Notes: This table presents the results from eq. (2), using longer aggregates and lags. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" In Panel A, "Disbursements" measures aggregated World Bank financial amounts disbursed in the months as indicated in column titles prior to the interview month in million, constant 2014 US\$ following project level disbursements over time. In Panel B, "Disbursements" measures lagged aggregated World Bank financial amounts disbursed in the 12 months as indicated in column titles prior to the interview month in million, constant 2014 US\$ following project level disbursements over time. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

In what follows, we explore various dimensions of heterogeneity regarding the effects on migration preferences. First, we analyze potential mediation variables. Following the analysis aid announcements, we interact the treatment variable with individual-level characteristics (Appendix Table C5). In line with the findings on aid announcements, the effect of aid disbursements is stronger among young and highly skilled individuals. Arguably, the young and highly educated have a longer expected lifespan, tend to be less established economically and are hence more flexible regarding new employment opportunities abroad. We do not observe a differential effect by gender, urban residence, or parenthood. In addition, individuals with a more positive view of their future are less likely to express migration preferences with higher levels of aid disbursements.

Second, we study the heterogeneity across world regions (Appendix Table C6). The results suggest that the short-term effect of aid disbursements on migration preferences is systematically negative and significant across all regions of the world, but Asia and Sub-Saharan Africa. For Asia, the point estimates is close to zero, indicating no effect, while for SSA it is negative yet noisily estimated. The latter is due to strong heterogeneity within Africa with respect to state fragility. In unreported regressions, we split the African sample into fragile and non-fragile states and we find that the point estimate is strongly negative and statistically significant for the

subgroup of non-fragile states, while it is close to zero for fragile ones.[39] This suggests that aid reduces migration preferences in African countries that do not suffer from high instability, while this effect disappears in the fragile nations. This is likely driven by a lack of aid effectiveness on individual expectations and development outcomes in these places, which we explore below.

Third, we also analyze recipient country heterogeneity by splitting the sample in different income categories according to the World Bank Income Classification (Appendix Table C7). The results provide evidence that the negative effect of aid disbursements on migration preferences exists everywhere, but that it is most pronounced in low-income countries.

Finally, we investigate project-level heterogeneity. For this, we split World Bank projects into the three broad sectors: Social Infrastructure and Services, Economic Infrastructure and Services, and Production Sectors (see details in Appendix Table A4). To be able to translate eq. (2) to the sectoral level, we aggregate disbursements and synthetic disbursements by sector and province-year-month (columns 1–3 of Appendix Table C8). The negative effect of aid disbursements on migration preferences is prevalent across all three broad sectors in the short to longer term. The magnitude is strongest in the Production Sector (i.e., agriculture, forestry, and fishing, as well as industry and mining), where the average annual World Bank disbursement of US\$ 11.6 million spent during the last 12 months reduces migration preferences by 0.7 percentage points, which is almost twice as large as our baseline estimate and those for the other target sectors.

5.3 Robustness Checks

We test the robustness of our baseline estimates in several ways and report the results from these exercises in Appendix B. First, we test the relevance of the instrument. For this, we augment eq. (3) with four leads and lags of the synthetic disbursement variable to show that changes in pre-determined synthetic disbursements also translate into changes in actual disbursements. Reassuringly, we find that the synthetic disbursements directly translate into actual disbursements at time t, while there is no significant effect on past or future disbursements (Appendix Figure C2).

Second, provide evidence in support of our identifying assumption, i.e., exogeneity of the instrumental variable. As planned project disbursements are a function of past project approvals, synthetic disbursement schedules must not be correlated with shocks occurring during the disbursement phase of World Bank projects. We follow Kraay (2012, 2014) and use a reduced form specification to show that there is no significant relation between synthetic disbursements and migration preferences (other than through actual disbursements). We augment the reduced form of our instrumental variable approach by four leads and lags of the synthetic disbursement variable (Appendix Figure C3). Reassuringly, neither past nor future synthetic disbursements are correlated with migration preferences. This provides evidence that

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[39]To do so we rely on data from the State Fragility Index (SFI) to categorize countries with respect to their fragility. On a scale between 0 and 120, with larger values indicating more fragility, we define states with an FSI above 90 as fragile, based on data from 2020. https://fragilestatesindex.org/, accessed 27 September 2023.

our identifying assumption is plausible.

Third, we conduct a randomization inference test to show that our results are not driven by spurious correlations. The test randomizes the amount of World Bank aid disbursements and the corresponding instrumental variable across different countries and years in the sample (Appendix Figure C4). All coefficient estimates from this exercise are concentrated around zero. According to an exact Fisher test, the coefficient from our province-level-aggregated estimate above (depicted by the vertical dashed line) is significantly different from the randomized coefficients (p-value of 0.037). This also holds when we modify the time dimension and randomize the entire time series between countries, years within countries, and countries within years. In summary, the results of our randomization test show that it is very unlikely that any omitted variables correlate with our variables of interest in a way that would spuriously produce our main results.

Fourth, we provide evidence that our results are robust to different empirical choices related to the construction of synthetic disbursements (Appendix Table C1). Our baseline results and the F-statistic remain almost identical when calculating the synthetic disbursements based on disbursement schedules of all projects, projects in the same sector, or projects in the same world region. They remain also robust when excluding the project itself, or all projects from the same country when calculating the synthetic disbursement schedules.

We also test for the robustness of our baseline results regarding the definition of our independent variable of interest, foreign aid disbursements. While our preferred definition is using absolute monetary values of aid disbursements for ease of interpretation, we also provide results for alternative definitions including aid disbursements per province capita, or when using the log of aid in per capita values (see Appendix Table C2).

Fifth, we show that our baseline results hold when dropping the survey sampling weights and when aggregating the data at the province-year level, both when using weighted means and unweighted means (Appendix Table C3).

Sixth, in Table C4, we alternate the level at which standard errors are clustered. The instrumental variable results are robust when clustering standard errors at the level of provinces, country×year, and province×year. They are also robust to clustering standard errors at the precise interview date, country×date, and province×date.

5.4   Mechanisms

Leveraging the wealth of individual-level data available from the GWP, we analyze how changes in aid lead to changes in migration preferences. Specifically, we test how World Bank aid project disbursements affect individual attitudes and welfare outcomes in recipient provinces. This helps explaining the mechanisms through which aid changes migration preferences and flows, which we study in the next section. Motivated by the existing literature and the World Bank's own development goals, we select the following dependent variables: poverty, income, unemployment, satisfaction with local public amenities, confidence in national institutions, perceptions of the

future, and perceptions of the economy.[40] We test the effects of aid on these variables by altering the outcome variables in eq. (2).

The main results are reported in Table 6. For the readers' convenience, column 1 reports again the baseline results for migration preferences using lags of aid disbursements between 1 month and 5 years. One of the most frequently declared objectives of foreign aid – and at the core of the World Bank's mission – is poverty reduction. In column 2, we therefore present results on the effect of aid disbursements on extreme poverty, measured with a binary variable that takes a value of one if the respondent reports a per capita income of below US$ 2.15. Column 3 uses the (logged) reported US$ value of the household's income per capita as dependent variable. The estimated coefficients for both outcome variables are basically zero in the short term up to three years after the initial disbursement, suggesting no effect on welfare measures. However, at lags of four to five years, respectively, the coefficients become statistically significant with a negative sign for extreme poverty and a positive sign for income per capita. The point estimates on the five-year lag suggest an average poverty reduction of approximately 0.5 percentage points and an increase in income per capita of 0.5 percent for the average annual World Bank aid disbursement worth 11.6 million US$ at the province level. These results thus provide evidence of positive individual welfare effects of World Bank aid project disbursements in the longer term, between four to five years after initial project disbursement. Column 4 reports the results for unemployment, using a binary dependent variable indicating whether the individual reports being unemployed or not. Comparing the point estimates across panels shows that they are close to zero for any lag, indicating no effect on unemployment whatsoever.

In columns 5 and 6, we explore aid effects on respondents' satisfaction with local public amenities and trust in national institutions. We measure the former with an index from the GWP that ranges between zero and one, with higher values reflecting greater levels of satisfaction.[41] For the latter outcome we rely on another GWP index that captures the respondents' trust in key public institutions of the country of residence.[42] While the resulting coefficients on public amenities are close to zero and statistically insignificant across all lags, the coefficients on trust in national institutions are positive and significant in the short term up to two years after initial disbursement. The point estimate suggests an increase in approximately 0.4 index points for the average annual World Bank aid disbursement of US$ 11.6 million at the province level. This translates into an increase of 0.8 percent at the sample mean. This effect,

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[40]The World Bank uses so-called development *scorecards* as internal achievement measures. They report the World Bank's and client performance relative to a set of quantitative goals and performance measures. See `https://scorecard.worldbank.org`, accessed 27 September 2023. Again, we provide descriptive statistics in Table A2.

[41]The index is based on seven questions that all start with "In the city or area where you live, are you satisfied or dissatisfied with" and then ends with "the public transportation systems", "the roads and highways", "the quality of air", "the quality of water", the "availability of good affordable housing", "the educational system or the schools", and "the availability of quality healthcare". The index is the share of subquestions to which the respondent replies with "satisfied".

[42]This index is based on the question "Do you have confidence in each of the following, or not?" and then computes the share of institutions for which the respondent replies with "yes" out of the following: the judicial system and courts, the military, the national government, and the honesty of elections. The index has a minimum value of 0 and a maximum of 100, with higher values indicating a more positive view of the national institutions.

however, disappears in the longer term. This result is consistent with a boost in confidence regarding national institutions in the short term, when individual first learn about new World Bank aid projects.

In the remaining columns 7 and 8, we analyze respondents' perceptions of their own future and that of the national economy.[43] The coefficients in column 7 are consistently close to zero across panels, indicating no effect. Turning to the expectations about the national economy, despite lacking statistical power, we observe a similar pattern as in column 8: the point estimates are positive and relatively large in the short term, with the coefficient for the first 12 month lag indicating a 0.5 index point increase for the average annual World Bank disbursement (i.e., a 22 percent increase at the mean). This is a large effect which is consistent with the improvements in attitudes and expectations found for the short-term announcement effects. However, starting at lag three, coefficients become close to zero and later switch signs providing some of more negative perceptions in the longer term.

Summing up, in line with the announcement effects, the negative effects of aid disbursements on migration preferences coincide with more trust in national government institutions and more positive expectations about the national economy in the short run, despite the latter results lacking statistical power. This can be interpreted as increased local aspirations, while capabilities as measured by selected welfare outcomes, remain constant. However, as the negative effect on migration preferences disappears in the longer term, so does the initial boost in attitudes and perceptions about the future. At the same time, we observe increases in individual welfare outcomes, measured by extreme poverty incidence and income. Based on our conceptual framework, this can be interpreted as a relative decline in local aspirations and absolute increase in capabilities, which could translate into larger migration flows, which we analyze in the next section.

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[43]For perceptions of the future, we use the "future better" variable from the announcement effect analysis above, indicating that an individual expects a better life in the future than today. Perceptions of the national economy are based on GWP indices, both ranging from zero to one. "National economy" is based on two questions: "Right now, do you think that economic conditions in this country, as a whole, are getting better or getting worse?" and "How would you rate your economic conditions in this country today – as excellent, good, only fair, or poor?" The index has a minimum value of -100 and a maximum of 100, with positive values indicating a positive view of the economy.

Table 6 – Disbursement effects on individual welfare and perceptions

	(1) Migration preference	(2) Extreme poverty	(3) Income (per capita)	(4) Un-employment	(5) Public amenities	(6) National institutions	(7) Future better	(8) National economy
Panel A: Month 0-1								
Disbursements	-0.00268***	-0.00009	0.00105	0.00010	-0.00043	0.24964*	0.00120	0.24195
	(0.00073)	(0.00021)	(0.00188)	(0.00029)	(0.00095)	(0.14504)	(0.00113)	(0.19585)
Observations	952713	895349	895349	910219	738804	803125	853826	529223
Mean DV	0.232	0.072	7.099	0.073	0.576	51.342	0.710	-2.252
F-stat	53.8	50.3	50.3	46.7	54.9	43.9	50.8	17.9
Panel B: Month 0-12								
Disbursements	-0.00029***	0.00001	0.00015	0.00003	-0.00000	0.03729**	0.00021	0.04379
	(0.00007)	(0.00003)	(0.00028)	(0.00003)	(0.00014)	(0.01770)	(0.00014)	(0.03303)
F-stat	129.5	115.9	115.9	99.5	89.3	131.5	122.8	172.8
Panel C: Month 13-24								
Disbursements	-0.00024***	0.00000	0.00029	0.00002	-0.00003	0.02007*	0.00011	0.02738
	(0.00006)	(0.00002)	(0.00037)	(0.00003)	(0.00011)	(0.01131)	(0.00010)	(0.02443)
F-stat	131.6	113.9	113.9	107.2	167.6	114.6	127.4	613.0
Panel D: Month 25-36								
Disbursements	-0.00018**	-0.00002	0.00041	0.00001	-0.00003	0.00587	0.00008	-0.00657
	(0.00009)	(0.00003)	(0.00038)	(0.00003)	(0.00012)	(0.01029)	(0.00007)	(0.02080)
F-stat	282.6	259.9	259.9	272.5	271.6	256.2	254.7	224.0
Panel E: Month 37-48								
Disbursements	-0.00005	-0.00003	0.00048*	0.00000	-0.00002	-0.00677	0.00010	-0.01022
	(0.00007)	(0.00003)	(0.00029)	(0.00002)	(0.00011)	(0.01001)	(0.00008)	(0.01139)
F-stat	628.2	701.3	701.3	608.1	493.7	542.5	620.8	217.7
Panel F: Month 49-60								
Disbursements	0.00001	-0.00004**	0.00042**	-0.00000	-0.00006	-0.01367	0.00009	-0.02059
	(0.00005)	(0.00002)	(0.00017)	(0.00001)	(0.00008)	(0.00876)	(0.00007)	(0.01392)
F-stat	439.9	402.9	402.9	391.4	369.0	377.6	403.4	40.9
Observations	952713	895349	895349	910219	738804	803125	853826	529223
Mean DV	0.232	0.072	7.099	0.073	0.576	51.342	0.710	-2.252

Notes: This table presents the results from eq. (2), where we change the outcome variable to test the different mechanisms. "Migration preference" indicates if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Extreme Poverty" indicates whether or not the individual's income is below the World Bank poverty line of US$ 2.15 per capita per day, or not. "Income per capita" measures logged per-capita income of the respondent in constant US$. We winsorize this variable one-sided at the 99-percent level. "Employment" indicates if the individual is employed or part-time employed. "Public amenities" measures satisfaction with public amenities based on a GWP index. "National institutions" measures confidence in national institutions based on a GWP index. "Future better" is a dummy variable indicating if life in the future is expected to be better than life today. "Local economy" measures perceptions of the local economy based a GWP index. "National economy" measures perceptions of the national economy based on a GWP index. "Disbursements" measures aggregated World Bank financial amounts disbursed in the months indicated prior to the interview month in million, constant 2014 US$ following project level disbursements over time. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

5.5 Migration and Asylum Seeker Flows

Having analyzed the effect of aid on individual migration preferences as a measure of aspirations as well as individual attitudes and welfare outcomes as a measure of capabilities, we now turn to realized migration flows. For this, we rely on annual bilateral flow data of migration and asylum seekers from the OECD International Migration Database. These data are available for 96 countries in our sample over the study period (2008–2019). This allows us to estimate the effects of aid on flows of migrants and asylum seekers from recipient countries. For this, we aggregate our disbursement dataset to the country-year level and merge it with the bilateral migration data. We estimate the following regression equation:

$$flow_{cdy} = \beta aid_{cy-l} + \delta X_{cy} + \kappa_{cd} + \lambda_{dy} + \epsilon_{cy}, \tag{4}$$

where $flow_{cdy}$ is the log number of migrants or asylum seekers, respectively, in a specific migration corridorbetween country of origin c to country of destination d in year y. aid_{cy-t} is our variable of interest, World Bank aid disbursements in millions of constant US\$ to the country of origin c in year $y - l$, with l representing different yearly lags. We instrument this variable with "synthetic disbursements" as outlined above but aggregating them to the country-year level, with the average annual World Bank disbursement at the country level being US\$ 130 million. X_{cy} is a vector of time varying control variables including the country-year weighted averages of our individual-level controls in eq. (2). κ_{cd} denotes bilateral origin-destination fixed effects, and λ_{dy} denotes destination-year fixed effects. Note that the bilateral fixed effects included in this regression equation absorb any time-invariant factors of specific migration corridors accounting, for example, for travel distance, linguistic similarities, colonial ties, or bilateral migration networks. Destination-year fixed effects absorb potentially confounding changes at the level of the destination country, such as changes in immigration policies, time-varying destination-specific shocks, and accounting for multilateral resistance in gravity-type regression equations (Bertoli and Fernández-Huertas Moraga 2013). ϵ_{cy} denotes the error term and we cluster standard errors at the country level.

Table 7 presents the baseline results from estimating eq. (4) with different lags l of aid disbursements (panels A–E). Columns 1 to 3 report the results for regular migration flows, which include mostly economic migration and family reunification. Columns 4 to 6 then report the estimates for asylum seeker flows, as reported by OECD member states' national registries. As reported in panel A, in the short term of up to two years, flows of asylum seekers respond negatively to aid disbursements, i.e., we observe a decrease in irregular migration flows from aid receiving countries. The point estimate from our preferred specification in column 6 (panel A and B) indicates a decrease of around 8.2 percent in flows for the average annual World Bank disbursement of 130 million US\$ at the country level. We do not observe any short term effect for regular migrants. This effect persists up to the second year after initial disbursements and then vanishes. Note that this effect is consistent with the short term announcement and disbursement effects on migration preferences, and the corresponding improvements in individual attitudes and perceptions, described above. Taken together, this suggests that decreases in migration

preferences translate into large short-term reductions in irregular migration to OECD countries, as measured by asylum applications at destination.

In contrast to the negative short-term reductions in asylum seeker flows, our results on the effect of aid on migration to OECD countries in the longer term point in the other direction. As reflected in the estimates reported in columns 1–3, in the longer term, starting between two to three years after initial disbursements (panel B and C), we observe that aid causes increases in regular migration flows. The point estimates in column 3–4 (panel C and D) indicate an increase of 7 percent for the average annual World Bank disbursement at the country level worth US\$ 130 million. This effect is persistent over time throughout the period of analysis. These findings are consistent with our earlier results in that the negative effect on migration preferences disappears and coincides with the corresponding improvements in individual welfare in the longer term. This suggests that positive aid effects as measured by reductions in poverty and improvements in income per capita translate into increases in regular migration flows to OECD countries. These longer term changes in migration flows materialize particularly through economic migration. As hypothesized by the 'mobility transition' theory, this can be interpreted as evidence that aid increases individual capabilities to migrate in the longer term, which then leads to increases in regular migration.

We conduct a range of heterogeneity analyses on the migration flow results using our preferred specification. First, we compare the findings across different World Bank aid receiving world regions (Appendix Table D1). Regarding the short term decrease of asylum seeker flows to the OECD, we find this effect to be driven by Latin American origin countries as well as the Middle East and North Africa in columns 6 and 8, with the results for these world regions being heterogeneous with respect to its magnitude and persistence. Asylum seeker flows from Latin America react relatively quickly to aid disbursements (lag 1 and 2 indicate effects in the magnitude of our baseline estimates), but this effect is short-lived. In the Middle East and North Africa the effect only occurs with a delay of one year but is persistent up to 5 years after disbursement.

In contrast, for the subsample of Sub-Saharan Africa countries, we find the results to be qualitatively different from the aggregate ones, in the following sense. For asylum seeker flows from fragile countries (column 10), the coefficient on the first lag is negative and sizeable, yet the coefficient remains insignificant in the short term. Again, we explore the underlying heterogeneity by state fragility (see Appendix Table D2). The results on the sample of fragile countries indicate no effect whatsoever, consistent with our earlier findings suggesting a lack of aid effectiveness in the subsample of fragile states in Sub-Saharan Africa. For the subsample of non-fragile states in columns 1 and 2, we find that both regular and irregular flows carry negative signs in the short term, with the one for regular flows at the first lag being significant. This suggests that in this subsample of Sub-Saharan Africa countries aid decreases regular migration flows in the short term. Interestingly, in the longer term between three to five years after the initial disbursements both regular and irregular migration flows increase significantly, with the magnitudes indicating large effects of between 8 and 14 precent. For subsample of non-fragile Sub-Saharan Africa countries, the results thus stand in contrast to the aggregate ones

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Table 7 – Migration flows and World Bank disbursements

	(1) Regular migrants	(2) Regular migrants	(3) Regular migrants	(4) Asylum seekers	(5) Asylum seekers	(6) Asylum seekers
Panel A: Lag 1 year						
Disbursements	0.00022	0.00017	0.00017	-0.00061**	-0.00063**	-0.00062**
	(0.00020)	(0.00021)	(0.00021)	(0.00025)	(0.00025)	(0.00025)
Observations	16504	16405	16405	19072	18995	18995
F-stat	27.7	28.2	27.8	26.6	26.9	26.4
Panel B: Lag 2 years						
Disbursements	0.00040	0.00050**	0.00045*	-0.00057**	-0.00064**	-0.00063**
	(0.00026)	(0.00024)	(0.00023)	(0.00026)	(0.00030)	(0.00030)
Observations	16504	16405	16405	19072	18995	18995
F-stat	21.6	22.5	22.3	24.3	24.2	23.8
Panel C: Lag 3 years						
Disbursements	0.00046*	0.00059**	0.00053**	-0.00025	-0.00036	-0.00036
	(0.00027)	(0.00027)	(0.00025)	(0.00030)	(0.00034)	(0.00034)
Observations	16504	16405	16405	19072	18995	18995
F-stat	26.7	26.6	26.3	23.3	23.1	22.7
Panel D: Lag 4 years						
Disbursements	0.00045	0.00060**	0.00054**	0.00016	0.00008	0.00009
	(0.00028)	(0.00029)	(0.00027)	(0.00033)	(0.00037)	(0.00036)
Observations	16504	16405	16405	19072	18995	18995
F-stat	18.2	17.8	17.8	18.1	18.1	17.9
Panel E: Lag 5 years						
Disbursements	0.00037	0.00049*	0.00045*	0.00032	0.00030	0.00031
	(0.00025)	(0.00025)	(0.00023)	(0.00024)	(0.00025)	(0.00025)
Observations	16504	16405	16405	19072	18995	18995
F-stat	12.7	12.4	12.6	15.3	15.1	15.0
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Country-destination FE	.	✓	✓	.	✓	✓
Destination-year FE	.	.	✓	.	.	✓

Notes: This table presents the results from a eq. (4). Columns 1-3 report the results using the number of regular migrants as outcome variable, columns 4-6 report results for the number of asylum seeker applications as outcome variable. "Disbursements" measures one year lagged, annual, aggregated World Bank financial amounts disbursed in million, constant 2014 US$, or further lags of this variable as indicated in panel titles. Individual controls include weighted means of the variables gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

indicating limited short-term reductions through regular migration flows, and large increases in regular and irregular flows to the OECD in the longer term, for the average annual World Bank disbursement at the country level.

Summing up, we present evidence suggesting that the effects of aid on migration preferences, described in Section 5.2, trigger corresponding changes in emigration from aid receiving countries, through regular migration channels and asylum seeker flows. These changes are consistent with the effects on attitudes and welfare outcomes discussed in Section 5.4. Our

two main findings are: (i) Aid affects positively the attitudes and aspirations of people living in recipient areas, and this translates into short-term decreases in asylum seeker flows to OECD destination countries. (ii) Aid is effective in improving individual welfare in the longer run, that can be interpreted as increased migration capabilities, and this results in increasing regular migration flows to the OECD, consistent with the "mobility transition" theory. These average patterns can be found in the subsample of Latin American countries and those in the Middle East & North Africa, with some heterogeneities in terms of magnitude and persistence. In contrast, for the subsample of non-fragile countries in Sub-Saharan Africa, our findings document limited short-term reductions through regular migration flows, and large increases in regular and irregular flows to the OECD in the longer term.

6   Conclusions

Governments of high-income countries promote foreign aid as a tool to reduce irregular migration from developing countries. Our results show that foreign aid has substantial effects on migration and development outcomes in aid-receiving provinces and can therefore play a role in curbing irregular migration, but it is far from a panacea. Our short-term results indicate that the mere announcement of a World Bank aid project significantly decreases migration preferences. We find similar effects for project disbursements, which also reduce asylum seeker flows to the OECD in the short run. This reduction seems related to enhanced optimism about the economic prospects in aid recipient provinces and improved confidence in national institutions. In the longer run, aid projects increase incomes and alleviate poverty. The negative effect of aid on asylum seeker flows fades out, and regular migration increases. That is consistent with the disappearance of negative short-run effects on migration aspirations and longer-run improvements in capabilities. In practice, if several donors and projects are active in a province or country, the effects of different projects that are started at different times will likely add up so that our estimated reductions in asylum seeker numbers might result in more sustained reductions. That however requires a continuous flow of new funds to yield a lasting effect.

There is no evidence in our study that targeting the "root causes" of migration through aid on average increases irregular migration or asylum seeker numbers. This temporary decrease in irregular migration and the longer-term increase in regular migration is consistent with the key objective of high-income country policymakers, who want to "manage" migration, and it should thus be counted as a (partial) success of the "root causes" approach.

The effect of aid comes with considerable heterogeneity that needs to be considered when designing future policies. While we obtain similar results with both of our identification strategies, the event study and the instrumental variables approach, the causal effect is not homogeneous across space. In the short run, aid projects reduce migration preferences and asylum seeker flows to the OECD from Latin America, MENA, and non-fragile Sub-Saharan African countries. However, we do not find a significant effect in fragile countries of Sub-Saharan Africa, which are an important source of irregular migration to Europe. For policymakers, a key takeaway from our study is that aid projects do not keep people from migrating from the

most hostile environments, but they can be effective in more stable environments.

It is essential to acknowledge that the World Bank projects we analyze are not designed to reduce migration, such as those implemented by the EU Trust Fund for Africa, and thus it is reasonable to interpret our results as conservative. Aid projects that are designed to target the "root causes" of migration specifically may have a more pronounced effect on migration outcomes. Still, when merely considering the dollars spent per asylum seeker or refused asylum seeker who do not arrive in a (high-income) host country, the price tag of this policy will remain high even if effectiveness is doubled or tripled.

That somewhat cynical simplification aside, when judging alternatives to aid, the welfare consequences and cost-effectiveness of the mechanisms that different policies target must be considered. Generally, there are two ways of decreasing migration with a policy: reducing migration aspirations and reducing capabilities. The root causes approach attempts to reduce migration aspirations, making more people stay in their country of origin voluntarily because their welfare at home improves. By contrast, policies such as stricter border enforcement reduce migration by decreasing capabilities, which merely increases involuntary immobility. The latter type of policy thus does not improve welfare in origin countries but, if anything, reduces it. Aid reducing the "root causes" of migration thus offers a more ethical strategy than merely restricting mobility in general would. However, as our results show, it is not a quick fix for irregular migration and a very costly way to reduce asylum seeker numbers.

The "root causes" strategy should not be seen in isolation but as part of a broader policy toolbox. Donor governments frequently use aid as a political tool to buy policy concessions from source and transit countries of migrants (Dreher et al. 2019). These concessions may include more restrictive border controls for emigrants and more cooperation in repatriating rejected asylum seekers.

Instead of using aid as a tool to reduce migration in the short term and likely being disappointed by limited effects on asylum seeker numbers, donor governments should consider ways in which aid *and* migration can be combined effectively to improve the medium- and long-term development of origin countries. That should involve legal pathways for more student migration and labor migration of low- and medium-skilled people, which can benefit labor markets in destination countries and, through the transfers of money, skills, and values by migrants back to their origin countries, reduce root causes of migration.

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ONLINE APPENDIX

A   Data appendix

Figure A1 – Migration trends by world region, 2008–2019
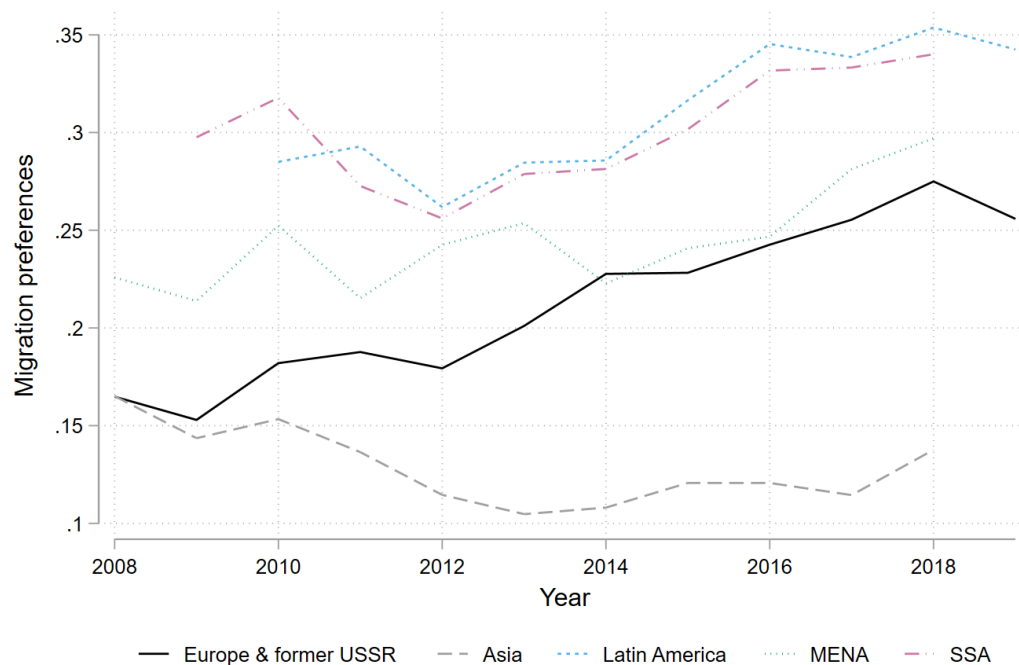
Notes: This figure shows the average migration preferences by world region. From the individual-level data of the GWP, we first create weighted country-year means and then simple means by continent and year.

Figure A2 – World Bank disbursements by broad sector and recipient country, 2008–2019
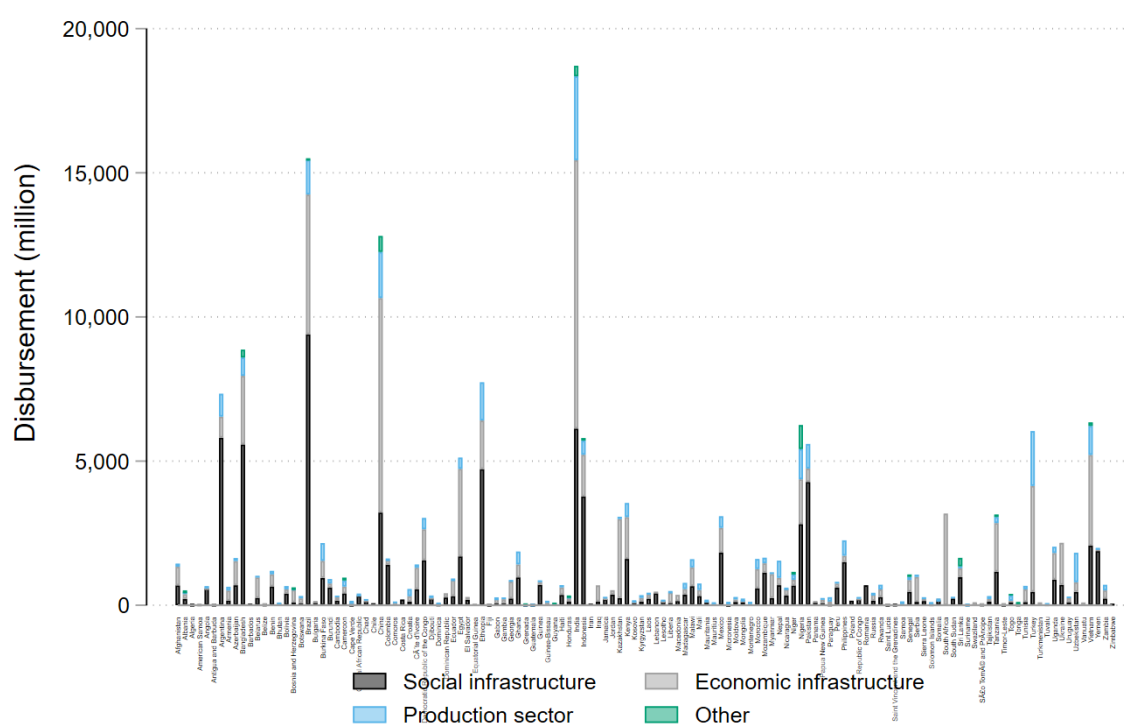
Notes: This figure shows the total amount in US$ million disbursed through World Bank projects between 2008 and 2019 by sector.

Figure A3 – World Bank project cycle
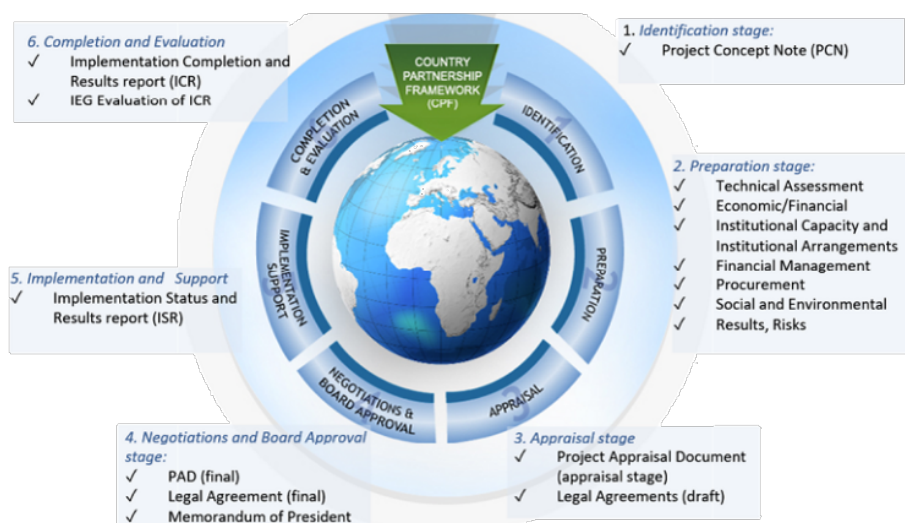
Notes: This figure presents an illustration of the typical the World Bank project cycle.[44] It provides an overview of the procedure from project initiation to completion and includes the project approval date in the project cycle.

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[44]This figure is published by the World Bank at `https://www.worldbank.org/en/projects-operations/products-and-services/brief/projectcycle`.

Figure A4 – Gallup World Poll interview date distribution by country in 2015
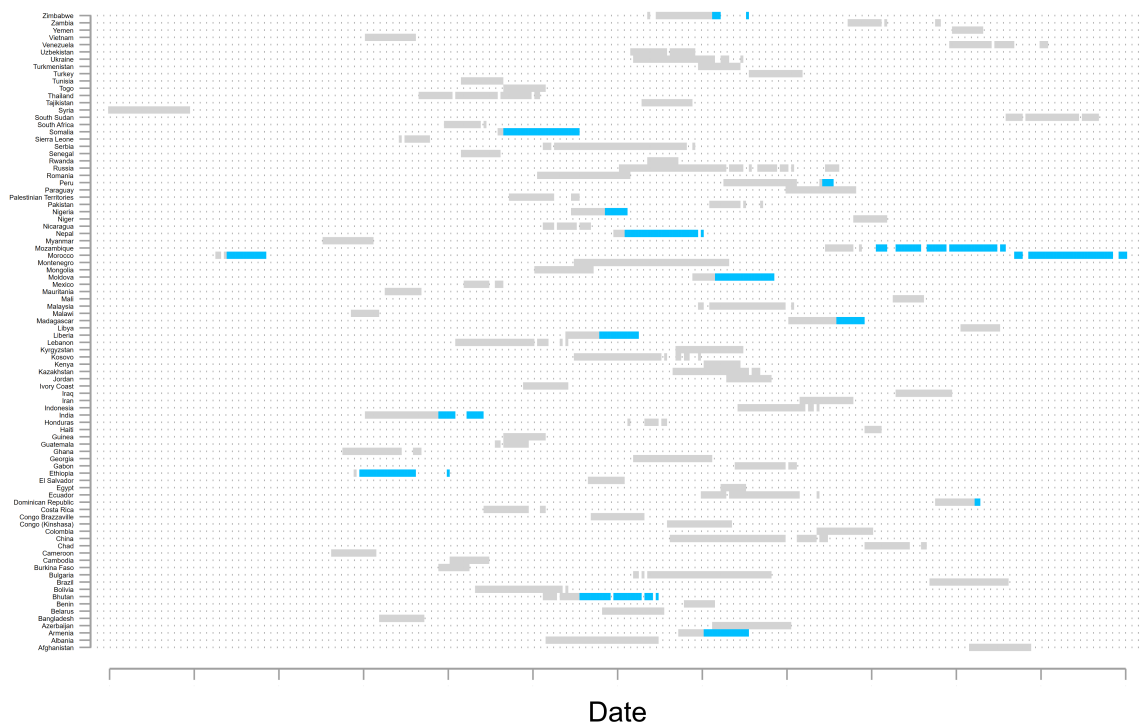
Date

Notes: This table presents the distribution of Gallup World Poll interview dates by country for our final sample in 2015. GWP interview dates are coloured gray. GWP interview dates after project approval in the respective country are coloured blue.

Figure A5 – Gallup World Poll interview date distribution
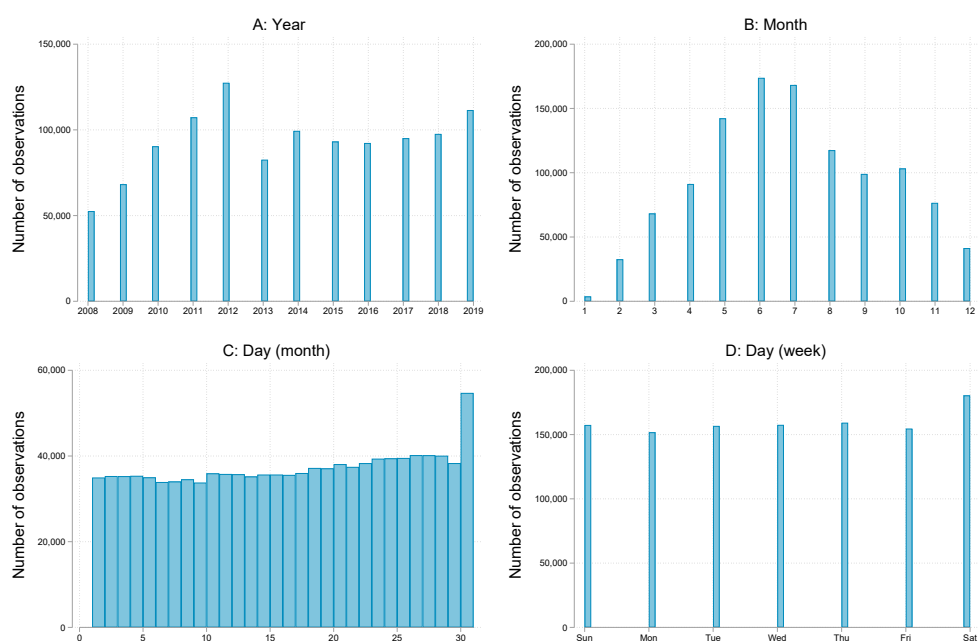
Notes: This table presents the distribution of Gallup World Poll interview dates by year (A), month (B), day of the month (C), and day of the week (D).

Figure A6 – World Bank project announcement date distribution
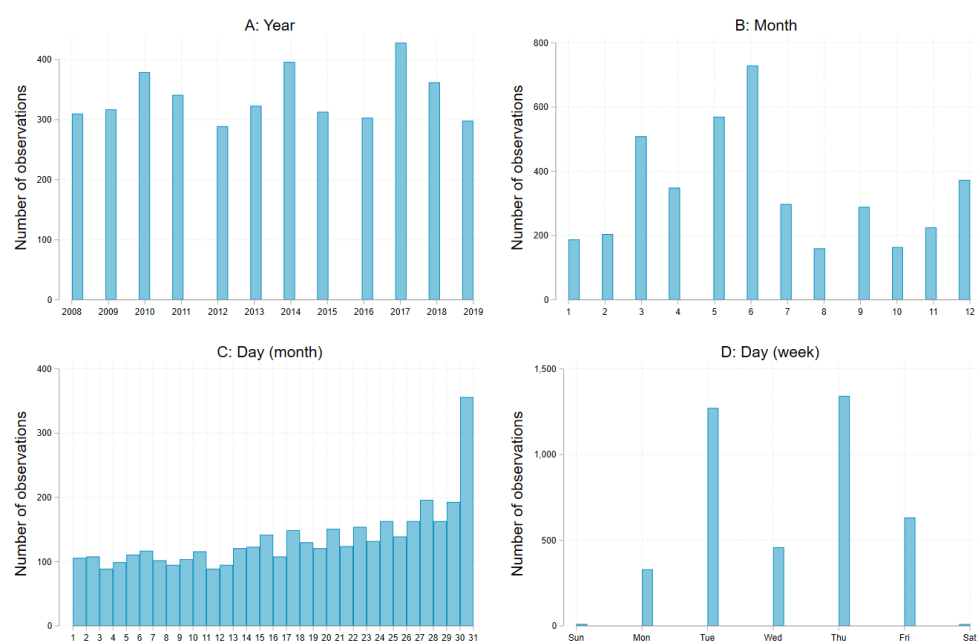
Notes: This table presents the distribution of World Bank board approval dates by year (A), month (B), day of the month (C), and day of the week (D).

Table A1 – List of countries

Afghanistan	Guatemala	Nigeria
Albania	Guinea	Pakistan
Algeria	Haiti	Palestinian Territories
Angola	Honduras	Paraguay
Armenia	India	Peru
Azerbaijan	Indonesia	Congo Brazzaville
Bangladesh	Iran	Romania
Belarus	Iraq	Russia
Belize	Jamaica	Rwanda
Benin	Jordan	Senegal
Bhutan	Kazakhstan	Serbia
Bolivia	Kenya	Sierra Leone
Brazil	Kosovo	Somaliland region
Bulgaria	Kyrgyzstan	Somalia
Burkina Faso	Laos	South Africa
Burundi	Lebanon	South Sudan
Cambodia	Lesotho	Sudan
Cameroon	Liberia	Suriname
Central African Republic	Libya	Eswatini
Chad	Madagascar	Syria
China	Malawi	Tajikistan
Colombia	Malaysia	Tanzania
Comoros	Mali	Thailand
Costa Rica	Mauritania	Togo
Ivory Coast	Mauritius	Tunisia
Congo (Kinshasa)	Mexico	Turkey
Djibouti	Moldova	Turkmenistan
Dominican Republic	Mongolia	Ukraine
Ecuador	Montenegro	Uzbekistan
Egypt	Morocco	Venezuela
El Salvador	Mozambique	Vietnam
Ethiopia	Myanmar	Yemen
Gabon	Namibia	Zambia
The Gambia	Nepal	Zimbabwe
Georgia	Nicaragua	
Ghana	Niger	

Notes: The table lists all 106 countries and territories included in our regression analysis.

Table A2 – Migration preferences and World Bank projects, descriptive statistics

	Count	Mean	Sd	Min	Max
Migration preference	95,2713	0.232	0.422	0	1
Female	95,2713	0.534	0.499	0	1
Age	95,2713	38.492	16.656	13	99
Age squared	95,2713	1,759.054	1,499.377	169	9,801
Education	95,2713	1.687	0.661	1	3
Urban	95,2713	0.374	0.484	0	1
Has a child	95,2713	0.629	0.483	0	1
Post	95,2713	0.175	0.380	0	1
Future better	85,3826	0.710	0.454	0	1
Relative future	85,3826	1.618	2.142	-10	10
Life in 5 years	85,8569	6.627	2.492	0	10
Life today	93,5791	4.970	2.304	0	10
Disbursements (1m)	18,809	0.972	5.729	-12	465
Synthetic disbursements (1m)	18809	1.018	2.865	0	43
Disbursements (12m)	18,809	11.621	35.882	-21	1,127
Synthetic disbursements (12m)	18809	12.301	34.046	0	491
Poor	89,5349	0.072	0.259	0	1
Income p.c.	89,5349	7.099	1.834	0	10
Unemployed	91,0219	0.073	0.259	0	1
Public amenities	73,8805	0.576	0.304	0	1
National Institutions Index	803125	51.342	37.134	0	100
Economic Confidence Index	529223	-2.252	70.884	-100	100

Notes: This table presents the descriptive statistics for the final sample used to estimate announcement and disbursement effects.

Table A3 – Migration preferences and migration flows

	(1)	(2)	(3)	(4)	(5)	(6)
			Outcome: Number of OECD migrants			
	Preferences	Preparations	Preferences OECD	Preparations OECD	Preferences OECD	Preparations OECD
Migration aspiration	0.72132***	3.36677**	0.60861*	4.33170**	1.37632***	2.15194***
	(0.26259)	(1.50077)	(0.35253)	(1.91672)	(0.02470)	(0.06424)
Observations	776	776	776	776	16504	16504
Mean DV	0.247	0.007	0.159	0.004	0.793	0.142
Country FE	✓	✓	✓	✓	✓	✓
Region-year FE	✓	✓	✓	✓	✓	✓

Notes: This table present results from a country-level regression of migration aspirations on logged actual migration flows into OECD countries. In columns 1–4, we use country-year level data. In columns 5–6, we use the dyadic data following eq. (4). All specifications include weighted country-year means of the individual controls gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A4 – World Bank project sector overview

Sector level I	Sector level II	Sector level III	Details
Social Infrastructure	Education	Education, level unspecified	General education sector, Public administration (Education)
Social Infrastructure	Education	Basic education	Adult literacy/non-formal education, Pre-primary and primary education
Social Infrastructure	Education	Secondary education	Secondary education, Vocational training
Social Infrastructure	Education	Post-secondary education	Tertiary education
Social Infrastructure	Health	Health	Health
Social Infrastructure	Health	Health, general	Compulsory health finance, Public administration (Health)
Social Infrastructure	Water	Water supply and sanitation	General water, sanitation and flood protection sector, Hydropower, Public administration (Water), Sewerage, Solid waste management, Wastewater Collection and Transportation, Wastewater Treatment and Disposal, Water supply
Social Infrastructure	Government	Government and civil society	Central government administration, General industry and trade sector, General public administration sector, Law and justice, Sub-national government administration
Economic Infrastructure	Other Social Infrastructure	Other social infrastructure	Compulsory pension and unemployment insurance, Other social services
Economic Infrastructure	Transport	Transport and storage	Aviation, General transportation sector, Ports, waterways and shipping, Public administration (Transportation), Railways, Roads and highways, Rural and Inter-Urban Roads and Highways, Urban Transport
Economic Infrastructure	Communications	Communications	General information and communications sector, Information technology, Media, Postal services, Public administration- Information and communications, Telecommunications
Economic Infrastructure	Energy	Energy generation and supply	Energy efficiency in Heat and Power, General energy sector, Other Renewable Energy, Power, Public administration- Energy and mining, Renewable energy, Thermal Power Generation, Transmission and Distribution of Electricity
Economic Infrastructure	Banking	Banking and financial services	Banking, Capital markets, Credit Reporting and Secured Transactions, General finance sector, Housing finance, Micro- and SME finance, Microfinance, Non-compulsory health finance, Non-compulsory pensions and insurance, Other non-bank financial intermediaries, Payments, settlements, and remittance systems, Public administration(Financial Sector), SME Finance
Production Sector	Agriculture, Forestry, Fishing	Agriculture, forestry, fishing	General agriculture, fishing and forestry sector
Production Sector	Agriculture, Forestry, Fishing	Agriculture	Agricultural extension and research, Animal production, Crops, Irrigation and drainage, Petrochemicals and fertilizers, Public administration- Agriculture, fishing and forestry
Production Sector	Agriculture, Forestry, Fishing	Forestry	Forestry
Production Sector	Industry and Mining	Industry	Agro-industry, Agro-industry, marketing, and trade, Other industry
Production Sector	Industry and Mining	Mineral resources and mining	Coal Mining, Mining and other extractive, Oil and gas, Other Mining and Extractive Industries
Production Sector	Trade	Trade policy and regulations	Other domestic and international trade, Public administration- Industry and trade
Other	Other	General environmental protection	Flood protection
Other	Other	Other	Housing construction
Other	Other	Unallocated/ unspecified	Unspecified

Notes: This table provides details on how AidData (2017) categorizes World Bank activities by sector. In this paper, we use the sector divisions under column 1 and 2. Column 3 and 4 serve to illustrate the type of project included in each sector category.

B Announcement effects

B.1 Robustness

Figure B1 – Migration preferences and World Bank announcements, Monte Carlo regressions
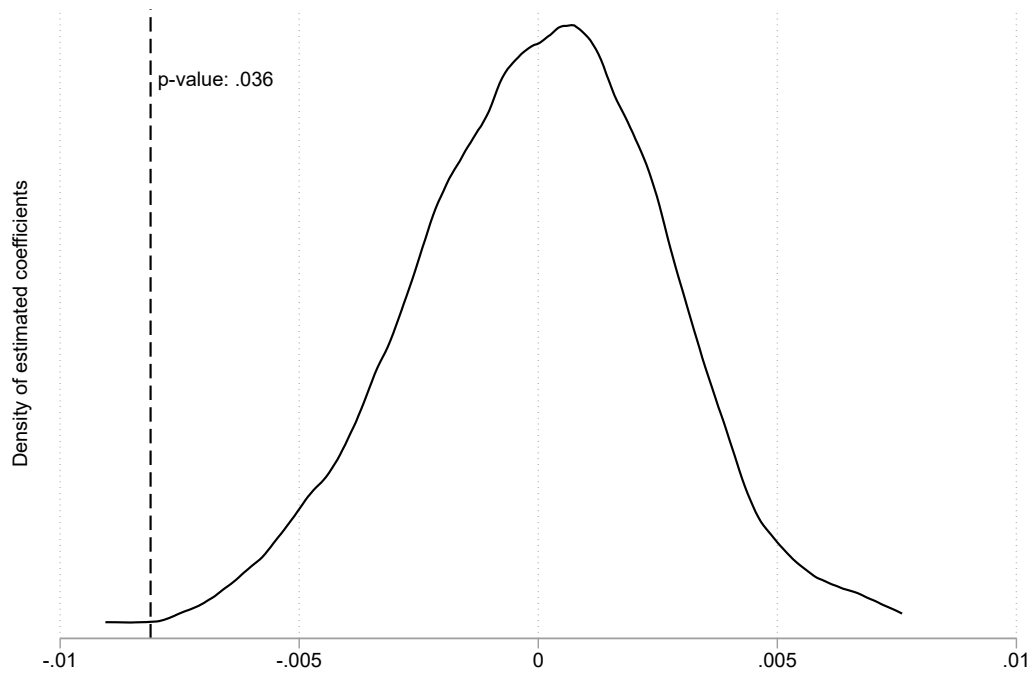
Notes: The figure shows the randomization inference test based on 999 Monte Carlo replications for the event study analysis. For this, we first draw an equal number of country-year waves (265) at random from the GWP, and then draw one random date from each of these windows that we use as placebo treatment. The original estimate from column 6 of Table 1 is shown by the dashed vertical line. The p-value of 3.6 percent is calculated as the proportion of times that the absolute value of the t-statistic in the simulated data exceed the absolute value of the original t-statistic.

Table B1 – World Bank announcements and media coverage

	(1)	(2)	(3)	(4)	(5)
	World Bank covered in recipient-country media				
	2018–2020				
	Dummy	Dummy	Dummy	Dummy	Number
Board approval $_{t-1}$	0.06287***	0.03334***	0.02906***	0.02524**	0.02991**
	(0.01656)	(0.01021)	(0.00998)	(0.00977)	(0.01241)
Observations	313470	313470	313470	313470	313470
Year FE	✓	✓	✓	✓	✓
Country-year FE	.	✓	✓	✓	✓
Month FE	.	.	✓	✓	✓
Day-of-the-week FE	.	.	✓	✓	✓
Year-month FE	.	.	.	✓	✓
Mean DV	0.117	0.117	0.117	0.117	0.145

Notes: This table presents the the results from regressing World Bank media coverage in recipient countries on World Bank board approval dates. The analysis is undertaken at the country-date level. The outcome variable in columns 1–4 indicates weather or not on a given day the World Bank is mentioned in the news of the recipient country. In column 5, we use the number of news articles reporting on the World Bank in the recipient country. The analysis is limited to the years 2018–2020 as news coverage data are only available for this time period. In columns 1–5, the treatment variable indicates whether or not a World Bank board approval occurred on a given day, lagged by one day. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

Table B2 – Migration preferences and World Bank project announcement, balance test

	(1)	(2)	(3)	(4)	(5)
	Gender	Age	Edu	Urban	Has child
Post	-0.00630	0.14651	-0.01080	-0.05155***	-0.00590
	(0.00694)	(0.17088)	(0.00913)	(0.01695)	(0.00421)
Observations	952336	952336	952336	952336	952336
Individual controls	✓	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓	✓
Day-of-the-week FE	✓	✓	✓	✓	✓
Year-month FE	✓	✓	✓	✓	✓
Province-year-month FE	✓	✓	✓	✓	✓
15-day-window	.	.	.	.	.
Mean DV	0.534	38.491	1.687	0.374	0.629

Notes: This table presents results from the balance test. Outcome variables are the individual-level control variables as indicated in column titles. "Post" is a dummy if the respondent was interviewed after the board approval of a World Bank project that will be implemented in the respondent's country. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

Table B3 – Migration preferences and World Bank announcements, alternative event windows

	(1) 5 days	(2) 10 days	(3) 15 days	(4) 20 days	(5) 30 days
Post	-0.00935*	-0.00918**	-0.00811**	-0.00861**	-0.00885**
	(0.00481)	(0.00392)	(0.00382)	(0.00368)	(0.00377)
Observations	85444	138305	172112	195501	224187
Individual controls	✓	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓	✓
Day-of-the-week FE	✓	✓	✓	✓	✓
Year-month FE	✓	✓	✓	✓	✓
Province-year-month FE	✓	✓	✓	✓	✓
Event-window	✓	✓	✓	✓	✓
Mean DV	0.213	0.208	0.203	0.197	0.193

Notes: This table presents the results from eq. (1), where we choose different bandwidths relative to the project event, as indicated in the column title. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" Treatment is a binary indicator if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

Table B4 – Migration preferences and World Bank announcements, dropping event days

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Event day		Event day + − 1 day		Event day + day after		Event day + day before	
Post	-0.01258***	-0.01101**	-0.01986***	-0.01856***	-0.01420***	-0.01246***	-0.01788***	-0.01683***
	(0.00404)	(0.00417)	(0.00530)	(0.00548)	(0.00437)	(0.00456)	(0.00503)	(0.00503)
Observations	943796	163573	926746	146523	935598	155376	934945	154721
Individual controls	✓	✓	✓	✓	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓	✓	✓	✓	✓
Day-of-the-week FE	✓	✓	✓	✓	✓	✓	✓	✓
Year-month FE	✓	✓	✓	✓	✓	✓	✓	✓
Province-year-month FE	✓	✓	✓	✓	✓	✓	✓	✓
15-day-window	.	✓	.	✓	.	✓	.	✓
Mean DV	0.232	0.203	0.232	0.201	0.232	0.203	0.232	0.202

Notes: This table presents the results from eq. (1), where we leave out the event day (and surrounding days). In columns 1 and 2, we leave out the event day. In columns 3 and 4, we leave out the event day plus the day before and after the event. In columns 5 and 6, we leave out the event day plus the day after the event. In columns 7 and 8, we leave out the event day plus the day before the event. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" Treatment is a binary indicator if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

Table B5 – Migration preferences and World Bank announcements, aggregates

	(1)	(2)	(3)	(4)
Post	-0.01337**	-0.01401**	-0.01475***	-0.01327**
	(0.00594)	(0.00576)	(0.00557)	(0.00628)
Observations	1060	1060	1060	438
Individual controls	✓	✓	✓	✓
Country FE	✓	✓	✓	✓
Year FE	.	✓	✓	✓
Month FE	.	.	✓	✓
Country-year FE	.	.	.	✓
Mean DV	0.247	0.247	0.247	0.229

Notes: This table presents the results from eq. (1), where we aggregate the individual-level data on the country-year level for the pre and post treatment period. We weight individuals using probability weights before we aggregate. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" Treatment is a binary indicator if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table B6 – Migration preferences and World Bank announcements, alternative outcome

	(1)	(2)	(3)	(4)	(5)
	Likelihood to move away from place of residence				
	2008–2019				
Post	-0.01433	-0.01526	-0.00959**	-0.00847*	-0.00722*
	(0.00982)	(0.00928)	(0.00407)	(0.00429)	(0.00412)
Observations	871406	871406	871406	871033	158421
Individual controls	.	✓	✓	✓	✓
Country-year FE	.	.	✓	✓	✓
Day-of-the-week FE	.	.	✓	✓	✓
Year-month FE	.	.	✓	✓	✓
Province-year-month FE	.	.	.	✓	✓
15-day-window	.	.	.	.	✓
Mean DV	0.232	0.232	0.232	0.232	0.205

Notes: This table presents the results from eq. (1), changing the outcome variable to whether or not individuals are likely to move their current place of residence based on the question "In the next 12 months, are you likely or unlikely to move away from the city or area where you live?" Treatment is a binary indicator if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table B7 – Migration preferences and World Bank announcements, capabilities

	(1)	(2)	(3)	(4)
	Migration plan		Migration preparation	
	2010–2015		*2010–2015*	
Post	-0.00480*	-0.00463	-0.00188	-0.00160
	(0.00289)	(0.00294)	(0.00194)	(0.00196)
Observations	566448	96751	566448	96751
Individual controls	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓
Day-of-the-week FE	✓	✓	✓	✓
Year-month FE	✓	✓	✓	✓
Province-year-month FE	✓	✓	✓	✓
15-day-window	.	✓	.	✓
Mean DV	0.218	0.193	0.218	0.193

Notes: This table presents the results from eq. (1), changing the outcome variable. Outcome variable in columns 1 and 2 is a binary indicator if the respondent plans to migrate based on the question "Are you planning to move permanently to that country in the next 12 months, or not?" Outcome variable in columns 3 and 4 is a binary indicator if the respondent prepares to migrate based on the question "Have you done any preparation for this move?" Both variables are only available for the 2010–2015 period. Treatment is a binary indicator if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table B8 – Migration preferences and World Bank announcements, alternative cluster

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Province		Counry & Province		Country Date		Country*Date	
Post	-0.00939**	-0.00811*	-0.00939**	-0.00811**	-0.00939**	-0.00811**	-0.00939**	-0.00811**
	(0.00417)	(0.00421)	(0.00365)	(0.00382)	(0.00367)	(0.00383)	(0.00371)	(0.00377)
Observations	952336	172112	952336	172112	952336	172112	952336	172112
Mean DV	0.232	0.203	0.232	0.203	0.232	0.203	0.232	0.203
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Country*year FE	✓	✓	✓	✓	✓	✓	✓	✓
Year-month FE	✓	✓	✓	✓	✓	✓	✓	✓
Day-of-the-week FE	✓	✓	✓	✓	✓	✓	✓	✓
Country-year-month FE	✓	✓	✓	✓	✓	✓	✓	✓
Province-year-month FE	✓	✓	✓	✓	✓	✓	✓	✓
15-day-window	.	✓	.	✓	.	✓	.	✓

Notes: This table presents the results from eq. (1). Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" Treatment is a binary indicator indicating if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered as indicated in column title: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

B.2   Additional Results

Table B9 – Migration preferences and World Bank announcements, project provinces

	(1)	(2)	(3)	(4)	(5)
Post	-0.06915***	-0.06307***	-0.00728	-0.01094**	-0.00956**
	(0.02039)	(0.01663)	(0.00525)	(0.00429)	(0.00456)
Post*province	0.04249*	0.02895	-0.00511	0.00490	0.00456
	(0.02316)	(0.01848)	(0.00781)	(0.00816)	(0.00863)
Observations	952713	952713	952713	952336	172112
Individual controls	.	✓	✓	✓	✓
Country-year FE	.	.	✓	✓	✓
Day-of-the-week FE	.	.	✓	✓	✓
Year-month FE	.	.	✓	✓	✓
Province-year-month FE	.	.	.	✓	✓
15-day-window	.	.	.	.	✓
Mean DV	0.232	0.232	0.232	0.232	0.203

Notes: This table presents the results from eq. (1), where we interact the treatment with an indicator for project provinces, that is, provinces where projects are implemented. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" Treatment is a binary indicator if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

Table B10 – Migration preferences and World Bank announcements, project-level heterogeneities

	(1)	(2)	(3)	(4)
Post	-0.01119	-0.01524**	-0.00872**	-0.00669
	(0.00682)	(0.00718)	(0.00413)	(0.00428)
Post*IDA	0.00252	0.00691		
	(0.00780)	(0.00810)		
Post*commitment value			-0.00001	-0.00002
			(0.00002)	(0.00002)
Observations	952336	177251	322609	172112
Individual controls	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓
Day-of-the-week FE	✓	✓	✓	✓
Year-month FE	✓	✓	✓	✓
Province-year-month FE	✓	✓	✓	✓
15-day-window	.	✓	.	✓
Mean DV	0.232	0.204	0.197	0.203

Notes: This table presents the results from eq. (1), where we interact the treatment with a binary variable indicating that a project is undertaken by the IDA (as compared to the IBRD) or the commitment value of the respective project. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" Treatment is a binary indicator if the respondent was interviewed after the World Bank project announcement. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table B11 – Migration preferences, perceptions of the future, and World Bank announcements

	(1) Future better	(2) Relative future	(3) Life in the future
Panel A: First stage			
Post	0.01491***	0.06184***	0.03576*
	(0.00564)	(0.02283)	(0.01898)
Mean DV	0.710	1.618	6.623
Panel B: Second stage			
Perception of future	-0.69927*	-0.16856*	-0.30728
	(0.37332)	(0.08885)	(0.19454)
Observations	853422	853422	853422
Individual controls	✓	✓	✓
Country-year FE	✓	✓	✓
Day-of-the-week FE	✓	✓	✓
Year-month FE	✓	✓	✓
Province-year-month FE	✓	✓	✓
15-day-window	.	.	.
Mean DV	0.236	0.236	0.236
F-stat	6.986	7.336	3.549

Notes: This table presents the results from an instrumental variable approach, where we instrument the three different measures for the perception of the future as indicated by column titles with the post dummy indicating if the respondent was interviewed after the World Bank project announcement as first-stage regression in panel A. Column 3 controls for perception of life today. In panel B, we show the second-stage regressions, where we regress a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" on the respective perception of the future variable. All specifications include the individual-level controls gender, age, age^2, education, an urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

C   Disbursement effects

C.1   Robustness

Figure C1 – World Bank disbursements, disbursement shares by sector
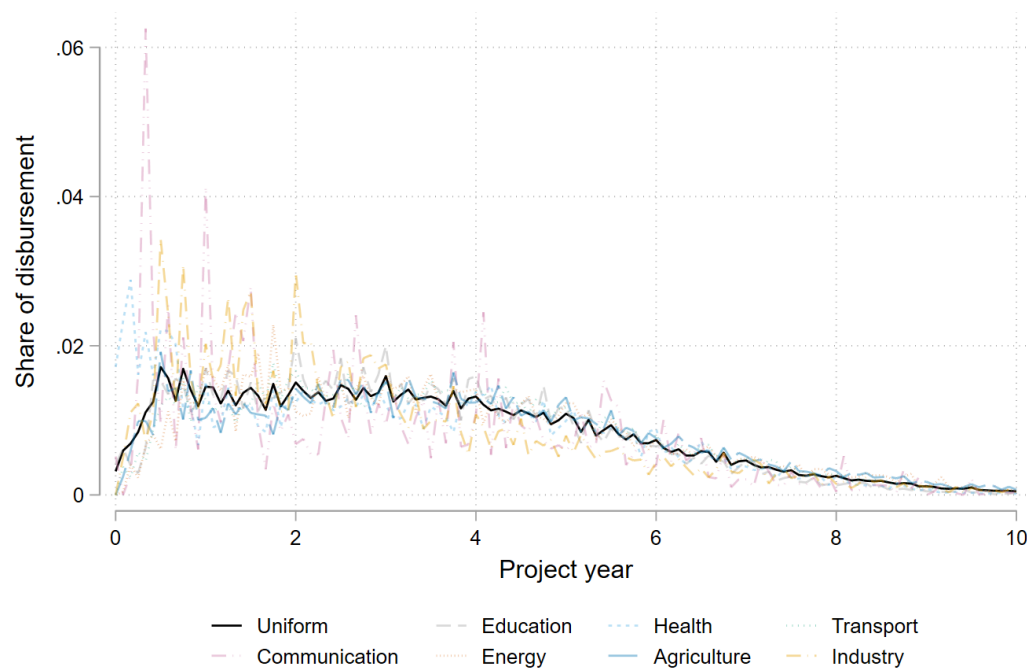
Notes: This table presents the share of project disbursements by project year over the lifetime of the project. "Uniform" presents the average disbursement share for all projects. The other lines present the average disbursement share by sector.

Figure C2 – Migration preferences and World Bank disbursements, augmented first stage

First stage, 1 month
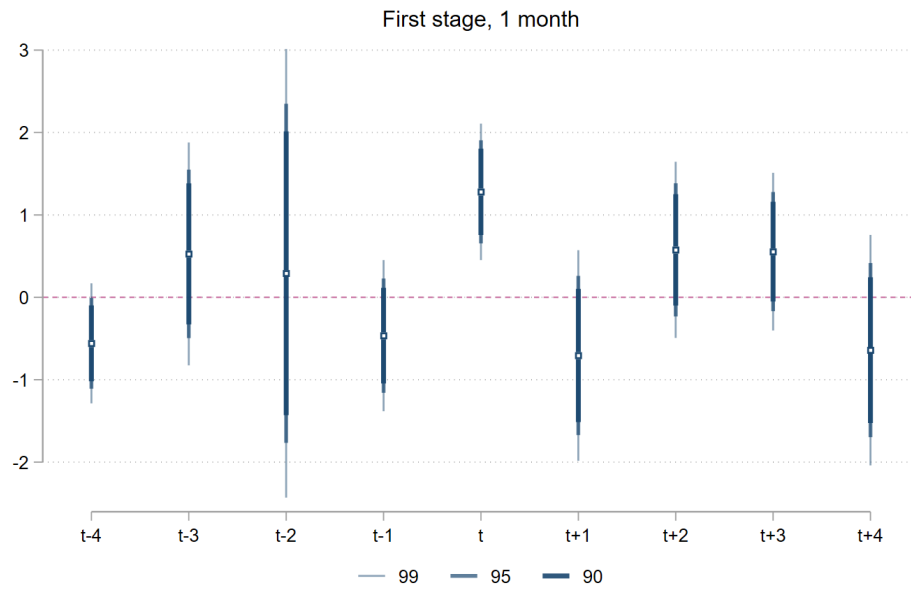
Notes: This table presents the results from th first stage regression in eq. (3), augmented with four leads and four lags of the synthetic disbursement variable.

Figure C3 – World Bank disbursements, augmented reduced form

Reduced form, 1 month
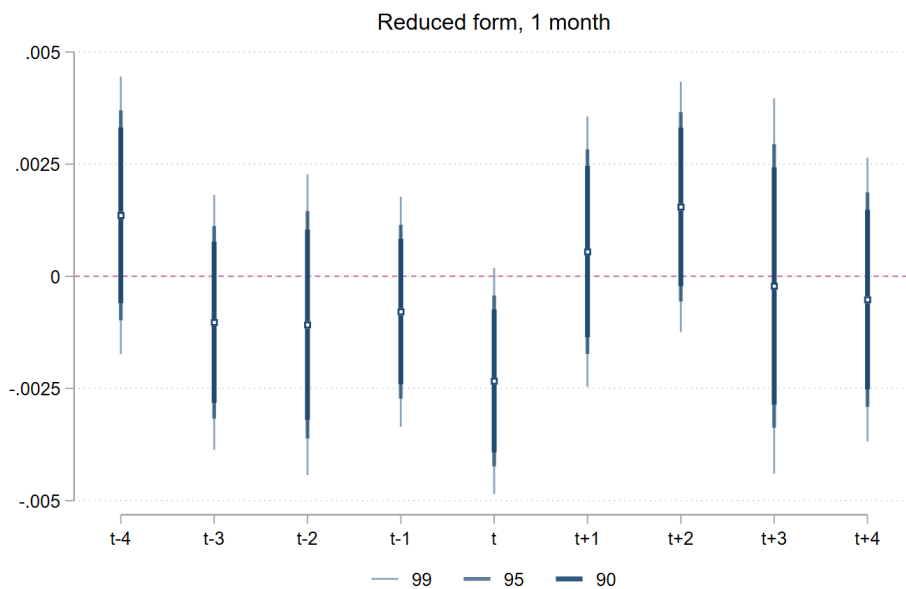
Notes: This table presents the results from the reduced form from eq. (2), augmented with four leads and four lags of the synthetic disbursement variable

Figure C4 – Migration preferences and World Bank disbursements, Monte Carlo simulations
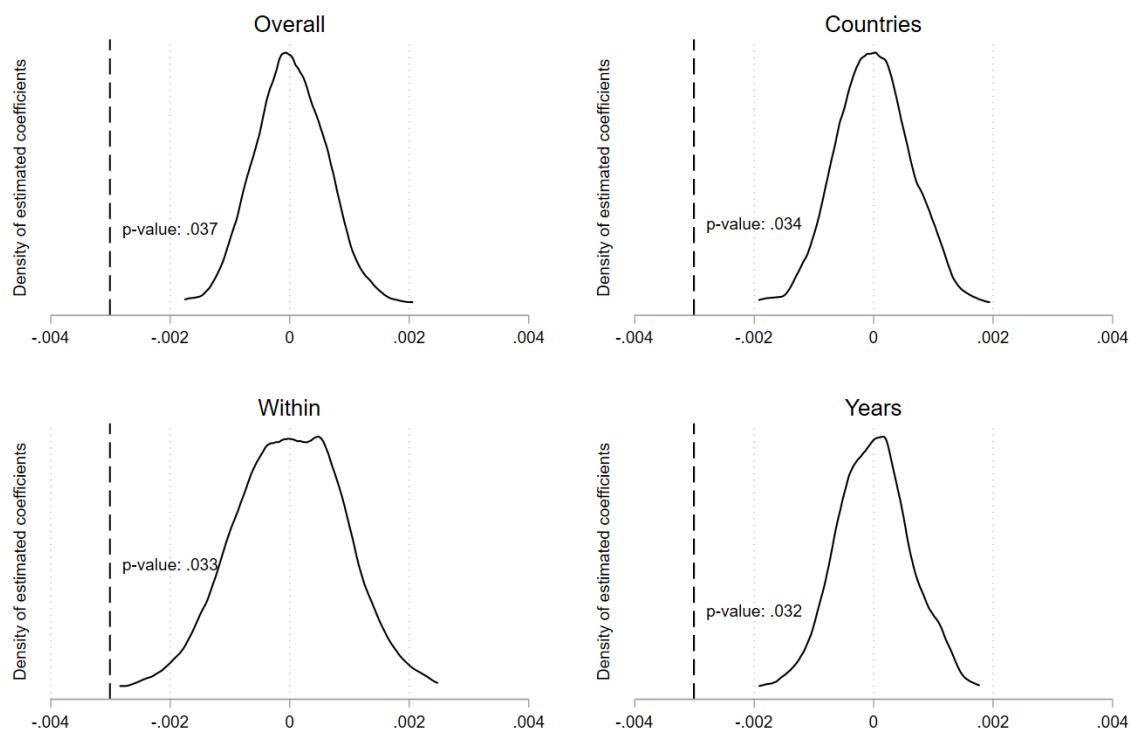
Notes: The figure shows the distribution of point coefficients of the disbursement of World Bank projects based on 999 Monte Carlo replications under different randomization inference tests. For this, we use province level aggregated data. The dotted line therefore depicts the coefficient estimated in Table C3 column 3 (0.00301). "Overall" swaps the number of projects completed and the instrument for all observations, "Countries" swaps the entire time series between countries, "Within" swaps years within countries, and "Years" swaps countries within years. The original estimate from column 1 of Table 4 is shown by dashed vertical lines. The p-values are calculated as the proportion of times that the absolute value of the t-statistics in the simulated data exceed the absolute value of the original t-statistic.

Table C1 – Migration preferences and World Bank disbursements, alternative synthetic disbursement schedules

	(1)	(2)	(3)	(4)	(5) Sector & region, leave-out project	(6) Sector & region, leave-out country
	All	Sector	Region	Sector & region		
Disbursements	-0.00341***	-0.00260***	-0.00362***	-0.00268***	-0.00262***	-0.00276***
	(0.00104)	(0.00093)	(0.00105)	(0.00073)	(0.00073)	(0.00080)
Observations	952713	952713	952713	952713	952713	952713
Individual controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓	✓	✓
Province FE	✓	✓	✓	✓	✓	✓
Mean DV	0.232	0.232	0.232	0.232	0.232	0.232
F-stat	72.5	46.3	70.0	53.8	52.3	41.6

Notes: This table presents the results from eq. (2), where we change the definition of the synthetic disbursement schedules. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Disbursements" measures aggregated World Bank disbursements in million, constant 2014 US\$. Synthetic disbursements are calculated based on disbursement schedules of all projects (column 1), projects in the same sector (column 2), projects in the same world region (column 3), projects in the same sector and world region (column 4). Column 5 repeats column 4, but we exclude the respective project when calculating the synthetic disbursement schedules following a leave-one-out logic. Similarly, column 6 calculates the synthetic disbursement schedules only based on projects from other countries. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C2 – Migration preferences and World Bank disbursements, alternative definition of aid

	(1) Million	(2) Population	(3) Log population
Disbursements	-0.00268***	-0.01146*	-0.04136***
	(0.00073)	(0.00628)	(0.01430)
Observations	952713	952713	952713
Individual controls	✓	✓	✓
Year FE	✓	✓	✓
Country FE	✓	✓	✓
Country-year FE	✓	✓	✓
Province FE	✓	✓	✓
Mean DV	0.232	0.232	0.232
F-stat	53.8	11.0	140.7

Notes: This table presents the results from eq. (2), where we change the definition of the synthetic disbursement schedules. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Disbursements" measures aggregated World Bank disbursements. Disbursements are measured in in million, constant 2014 US\$ in column 1, in million, constant 2014 US\$ divided by population in column 2, and in then in million, constant 2014 US\$, divided by population and logged in column 3. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C3 – Migration preferences and World Bank disbursements, alternative weights and aggregates

	(1)	(2)	(3) Aggregates (weighted)	(4) Aggregates (unweighted)
	Baseline	No weights		
Disbursements	-0.00268***	-0.00263***	-0.00336*	-0.00276
	(0.000733)	(0.000604)	(0.00193)	(0.00172)
Observations	952,713	952,713	13,011	13,011
R-squared	0.045	0.045	0.046	0.048
Individual controls	✓	✓	✓	✓
Country*year FE	✓	✓	✓	✓
Province FE	✓	✓	✓	✓
F-stat	53.79	66.38	10.13	10.12

Notes: This table presents the results from eq. (2), where we change weights and use aggregates instead of using the individual-level data. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Disbursements" measures aggregated World Bank disbursements in million, constant 2014 US\$. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Column 1 presents our baseline. Column 2 presents the baseline without probability weights. Columns 3 and 4 present results when aggregating data on the province-year level, using probability weights to create means in column 3, and no weights to create means in column 4. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C4 – Migration preferences and World Bank disbursements, alternative cluster

	(1) Country	(2) Country × year	(3) Province	(4) Province × year	(5) Date
Disbursements	-0.00268***	-0.00268***	-0.00268***	-0.00268***	-0.00268***
	(0.00073)	(0.00060)	(0.00081)	(0.00075)	(0.00040)
Observations	952713	952713	952713	952713	952713
Individual controls	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓	✓
Province FE	✓	✓	✓	✓	✓
Mean DV	0.232	0.232	0.232	0.232	0.232
F-stat	53.8	34.0	21.4	21.2	133.2

Notes: This table presents the results from eq. (2), where we change the level standard errors are clustered on. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Disbursements" measures aggregated World Bank disbursements in million, constant 2014 US$. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered as indicated in column titles: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

C.2   Additional Results

Table C5 – Migration preferences and World Bank disbursements, heterogeneous effects

	(1) Female	(2) Under 30	(3) High skilled	(4) Urban	(5) Child	(6) Future better
Panel A: months 0–1						
Disbursement	-0.00262***	-0.00084	-0.00170**	-0.00286***	-0.00246***	-0.00193**
	(0.00093)	(0.00108)	(0.00082)	(0.00098)	(0.00078)	(0.00091)
Characteristic	-0.04427***	0.01362***	0.02689***	0.02767***	-0.00039	0.00470
	(0.00506)	(0.00503)	(0.00657)	(0.00312)	(0.00245)	(0.00327)
Interaction	-0.00012	-0.00485***	-0.00197*	0.00041	-0.00037	-0.00081*
	(0.00093)	(0.00149)	(0.00116)	(0.00086)	(0.00034)	(0.00047)
Observations	952713	952713	952713	952713	952713	853826
Mean of characteristic	0.534	0.364	0.576	0.374	0.629	0.710
F-stat	27.0	26.9	27.1	27.2	27.4	25.4
Panel B: months 0–12						
Disbursements	-0.00030***	-0.00014	-0.00020**	-0.00029***	-0.00027***	-0.00024***
	(0.00007)	(0.00010)	(0.00009)	(0.00008)	(0.00007)	(0.00009)
Characteristic	-0.04447***	0.01399***	0.02746***	0.02817***	-0.00034	0.00464
	(0.00509)	(0.00514)	(0.00662)	(0.00313)	(0.00245)	(0.00327)
Interaction	0.00001	-0.00043***	-0.00019*	0.00000	-0.00004	-0.00006
	(0.00008)	(0.00012)	(0.00010)	(0.00007)	(0.00003)	(0.00004)
Observations	952713	952713	952713	952713	952713	853826
Mean DV	0.534	0.364	0.576	0.374	0.629	0.710
F-stat	64.8	64.8	64.3	65.4	64.9	60.9

Notes: This table presents the results from eq. (2), where we interact the independent variable and the instrument with individual-level characteristics as indicated in column titles. "Female" indicates whether or not the respondent is female. "Under 30" indicates whether or not the respondent is under the age of 30. "High skilled" indicates whether or not the respondent has an education of more than 8 years. "Urban" indicates whether or not the respondent lives in an urban area. "Has child" indicates whether or not the respondent has a child. "Future better" indicates whether life in the future is expected to be better than life today. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Disbursements" measures aggregated World Bank financial amounts disbursed in the months indicated prior to the interview month in million, constant 2014 US$. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** p<0.01, ** p<0.05, * p<0.1.

Table C6 – Migration preferences and World Bank disbursements by world region and sector

	(1) Europe & Former USSR	(2) Asia	(3) Latin America	(4) Middle East & North Africa	(5) Sub-Saharan Africa
Panel A: All sectors					
Disbursements	-0.00937***	-0.00114	-0.00375***	-0.00373**	-0.00350
	(0.00108)	(0.00074)	(0.00037)	(0.00131)	(0.00309)
Observations	183323	209935	139686	147471	272298
F-stat	54.9	15.4	199.9	285.0	47.8
Panel B: Social infrastructure					
Sector Disbursements	-0.01878	-0.00208	-0.00207***	0.00071	-0.02080***
	(0.01485)	(0.00154)	(0.00035)	(0.01379)	(0.00533)
Observations	183323	209935	139686	147471	272298
F-stat	2.6	8.3	93.7	52.2	35.4
Panel C: Economic infrastructure					
Sector Disbursements	-0.00844***	-0.00140	0.05499**	-0.00570*	-0.00122
	(0.00127)	(0.00159)	(0.02571)	(0.00289)	(0.00187)
Observations	183323	209935	139686	147471	272298
F-stat	43.6	19.9	4.2	14.6	30.0
Panel D: Production sector					
Sector Disbursements	-0.02868**	-0.00338***	-0.03443	-0.01645***	-0.01778
	(0.01322)	(0.00047)	(0.09577)	(0.00048)	(0.03911)
Observations	183323	209935	139686	147471	272298
F-stat	11.7	26.5	5.5	21067.1	23.1
Individual controls	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓
Country-year FE	✓	✓	✓	✓	✓
Province FE	✓	✓	✓	✓	✓
Mean DV	0.204	0.104	0.288	0.243	0.314

Notes: This table presents the results from eq. (2), where we split the sample by world region and show the results by project sector. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" In panel A, "Disbursements" measures aggregated World Bank financial amounts disbursed in the 12 months prior to the interview month in million, constant 2014 US\$. Panel B subsets disbursements to all disbursements in the sector social infrastructure. Panel C subsets disbursements to all disbursements in the sector economic infrastructure. Panel D subsets disbursements to all disbursements in the sector production sector. We also subset disbursements accordingly when creating the synthetic disbursement schedules. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C7 – Migration preferences and World Bank disbursements by income group and sector

	(1) Low income	(2) Lower middle income	(3) Upper middle income
Panel A: All sectors			
Disbursements	-0.00540**	-0.00141*	-0.00374***
	(0.00251)	(0.00071)	(0.00096)
Observations	222680	356372	373661
F-stat	67.0	12.3	101.0
Panel B: Social infrastructure			
Sector Disbursements	-0.00535	-0.00290	-0.00265***
	(0.01119)	(0.00234)	(0.00085)
Observations	222680	356372	373661
F-stat	30.2	6.9	35.2
Panel C: Economic infrastructure			
Sector Disbursements	-0.00780*	-0.00242**	-0.00564
	(0.00393)	(0.00093)	(0.00557)
Observations	222680	356372	373661
F-stat	17.7	14.3	3.3
Panel D: Production sector			
Sector Disbursements	-0.00336***	-0.00413***	-0.01680***
	(0.00115)	(0.00103)	(0.00215)
Observations	222680	356372	373661
F-stat	580.7	15.0	605.6
Individual controls	✓	✓	✓
Year FE	✓	✓	✓
Country FE	✓	✓	✓
Country-year FE	✓	✓	✓
Province FE	✓	✓	✓
Mean DV	0.288	0.224	0.205

Notes: This table presents the results from eq. (2), where we split the sample by World Bank income group and show the results by project sector. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" In panel A, "Disbursements" measures aggregated World Bank financial amounts disbursed in the 12 months prior to the interview month in million, constant 2014 US\$. Panel B subsets disbursements to all disbursements in the sector social infrastructure. Panel C subsets disbursements to all disbursements in the sector economic infrastructure. Panel D subsets disbursements to all disbursements in the sector production sector. We also subset disbursements accordingly when creating the synthetic disbursement schedules. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C8 – Migration preferences and World Bank disbursements by project sector

	(1) Social Infrastructure (SI)	(2) Economic Infrastructure (EI)	(3) Production Sector (PS)	(4) Education (SI 1)	(5) Health (SI 2)	(6) Water (SI 3)	(7) Government (SI 5)	(8) Transport (EI 1)	(9) Energy (EI 2)	(10) Agriculture, Forest, Fishing (PS 1)	(11) Industry & Mining (PS 2)
Panel A: Month 0-1											
Sector Disbursements	-0.00277***	-0.00379*	-0.00689***	-0.00307	-0.01764	-0.00665**	-0.00183***	-0.00547	-0.00308	-0.00490***	-0.00283**
	(0.00089)	(0.00200)	(0.00262)	(0.00446)	(0.01528)	(0.00326)	(0.00059)	(0.00374)	(0.00267)	(0.00152)	(0.00117)
Observations	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713
F-stat	10.0	9.1	14.6	28.2	6.4	26.3	61.6	4.2	36.9	40.0	11.9
Panel B: Month 0-12											
Sector Disbursements	-0.00039***	-0.00032**	-0.00062***	-0.00040	-0.00069	-0.00052	-0.00034***	-0.00037*	-0.00030	-0.00037**	-0.00069**
	(0.00009)	(0.00013)	(0.00015)	(0.00074)	(0.00092)	(0.00039)	(0.00010)	(0.00020)	(0.00018)	(0.00018)	(0.00031)
Observations	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713
F-stat	25.8	23.7	28.9	34.9	30.9	9.9	182.6	10.4	94.4	92.5	80.4
Panel C: Month 13-24											
Disbursements	-0.00150***	-0.00054**	-0.00268	-0.02338	-0.01042*	-0.01410	-0.00235***	-0.00075**	-0.00280	-0.01825	-0.00984
	(0.00049)	(0.00021)	(0.00166)	(0.01613)	(0.00593)	(0.03293)	(0.00075)	(0.00035)	(0.00178)	(0.02424)	(0.00821)
Observations	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713
F-stat	11.5	25.8	2.0	2.6	6.9	0.2	7.8	12.3	2.9	0.6	1.5
Panel D: Month 25-36											
Disbursements	-0.00136	-0.00031*	-0.00340	-0.00423	-0.00794	-0.01014	-0.00302	-0.00041*	-0.00166*	-0.07290	-0.02307
	(0.00093)	(0.00017)	(0.00308)	(0.00417)	(0.00548)	(0.02472)	(0.00227)	(0.00025)	(0.00098)	(0.78231)	(0.02865)
Observations	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713
F-stat	5.6	48.9	0.8	1.5	5.0	0.2	3.3	23.0	3.6	0.0	0.8
Panel E: Month 37-48											
Disbursements	-0.00055	-0.00008	-0.00128	-0.00490	-0.00321	-0.00397	-0.00087	-0.00010	-0.00045	0.00379	-0.00808
	(0.00070)	(0.00012)	(0.00157)	(0.00802)	(0.00482)	(0.01069)	(0.00114)	(0.00016)	(0.00054)	(0.01343)	(0.01519)
Observations	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713
F-stat	8.6	22.1	0.4	2.9	7.1	0.1	7.3	13.0	3.5	0.2	2.9
Panel F: Month 49-60											
Disbursements	0.00015	0.00003	0.00048	0.00080	0.00094	0.00052	0.00042	0.00004	0.00015	-0.00088	0.00235
	(0.00058)	(0.00010)	(0.00223)	(0.00293)	(0.00345)	(0.00197)	(0.00161)	(0.00012)	(0.00060)	(0.00278)	(0.00785)
Observations	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713	952713
F-stat	9.6	12.8	0.3	4.8	4.5	1.8	3.1	8.4	3.9	0.4	9.3

Notes: This table presents the results from eq. (2), where we look at subsets of aid projects by sector. Columns 1–3 report results for the three main sectors social infrastructure (SI), economic infrastructure (EI), and production sector (PS). Columns 4–10 report results for the main sub-sectors of the three main sectors: Education, health, governance (all SI), transport, energy (all EI), and agriculture, forestry, and fishing, and industry and mining (all PS). We also subset disbursements accordingly when creating the synthetic disbursement schedules. Outcome variable is a binary indicator if the respondent prefers to migrate based on the question "Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?" "Disbursements" measures aggregated World Bank financial amounts disbursed in the respective sector in the month(s) prior to the interview month as indicated in panel titles in million, constant 2014 US\$. Individual controls include gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

D Migration flows

Table D1 – Migration flows and World Bank project disbursements by world region

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Europe & Former USSR		Asia		Latin America		Middle East & North Africa		Sub-Saharan Africa	
	Migration flows 2008–2019	Asylum seeker 2008–2019	Migration flows 2008–2019	Asylum seeker 2008–2019	Migration flows 2008–2019	Asylum seeker 2008–2019	Migration flows 2008–2019	Asylum seeker 2008–2019	Migration flows 2008–2019	Asylum seeker 2008–2019
Panel A: Lag 1										
Disbursements	0.00071	-0.00056	-0.00009	-0.00041	-0.00010	-0.00076***	0.00017	0.00003	-0.00032	-0.00032
	(0.00071)	(0.00081)	(0.00070)	(0.00086)	(0.00006)	(0.00025)	(0.00018)	(0.00020)	(0.00045)	(0.00043)
F-stat	6.8	6.7	6.1	5.3	189.8	280.1	30.5	28.4	47.4	44.9
Panel B: Lag 2										
Disbursements	0.00084	-0.00081	0.00044	0.00006	0.00025	-0.00072	-0.00013	-0.00075**	-0.00001	-0.00003
	(0.00067)	(0.00110)	(0.00082)	(0.00053)	(0.00024)	(0.00044)	(0.00025)	(0.00031)	(0.00035)	(0.00022)
F-stat	6.5	5.7	4.6	4.4	33.8	34.6	33.2	32.5	39.6	33.6
Panel C: Lag 3										
Disbursements	0.00072	-0.00023	0.00105	0.00108	0.00036*	-0.00010	-0.00035	-0.00104**	0.00056***	0.00026
	(0.00042)	(0.00088)	(0.00099)	(0.00075)	(0.00017)	(0.00039)	(0.00033)	(0.00036)	(0.00018)	(0.00032)
F-stat	13.2	13.0	5.0	4.7	220.1	111.1	51.3	53.7	67.1	44.4
Panel D: Lag 4										
Disbursements	0.00042**	0.00023	0.00180	0.00222	0.00036**	0.00033	-0.00046	-0.00110*	0.00071***	0.00069**
	(0.00019)	(0.00084)	(0.00173)	(0.00209)	(0.00015)	(0.00025)	(0.00037)	(0.00052)	(0.00014)	(0.00027)
F-stat	22.3	19.8	1.5	1.5	366.6	217.6	37.5	37.4	41.7	58.9
Panel E: Lag 5										
Disbursements	0.00033	0.00079	0.00176	0.00227	0.00022**	0.00025	-0.00063	-0.00125	0.00069***	0.00084***
	(0.00020)	(0.00090)	(0.00159)	(0.00177)	(0.00009)	(0.00014)	(0.00041)	(0.00071)	(0.00020)	(0.00024)
F-stat	19.1	16.6	1.9	2.6	2453.2	1839.1	28.2	26.7	31.7	24.9

Notes: This table presents the results from a eq. (4), where we split the sample by world region, as indicated in column titles. "Disbursements" measures one year lagged, annual, aggregated World Bank financial amounts disbursed in million, constant 2014 US\$, or further lags of this variable as indicated in panel titles. Individual controls include weighted means of the variables gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table D2 – Migration flows World Bank project disbursements, by state fragility status, Sub-Saharan Africa

	(1)	(2)	(3)	(4)
	Non-Fragile		Fragile	
	Migration flows 2008–2019	Asylum seeker 2008–2019	Migration flows 2008–2019	Asylum seeker 2008–2019
Panel A: Lag 1				
Disbursements	-0.00060***	-0.00046	0.00001	-0.00014
	(0.00019)	(0.00028)	(0.00052)	(0.00049)
F-stat	70.4	80.7	12.2	8.6
Panel B: Lag 2				
Disbursements	-0.00020	0.00015	0.00011	-0.00024
	(0.00014)	(0.00023)	(0.00049)	(0.00046)
F-stat	59.7	90.8	83.4	34.3
Panel C: Lag 3				
Disbursements	0.00065***	0.00069***	0.00025	-0.00025
	(0.00009)	(0.00023)	(0.00043)	(0.00034)
F-stat	71.3	56.8	239.6	515.7
Panel D: Lag 4				
Disbursements	0.00091***	0.00107***	0.00049**	0.00036
	(0.00012)	(0.00018)	(0.00023)	(0.00031)
F-stat	264.7	342.3	90.6	94.9
Panel E: Lag 5				
Disbursements	0.00110***	0.00094***	0.00034	0.00058
	(0.00015)	(0.00018)	(0.00024)	(0.00047)
F-stat	235.8	194.2	232.7	357.7

Notes: This table presents the results from a eq. (4), where we split the sample by state fragility. We subset the sample to Sub-Saharan Africa. Columns 1–2 report results for non-fragile states, columns 3–4 report results for fragile states. "Disbursements" measures one year lagged, annual, aggregated World Bank financial amounts disbursed in million, constant 2014 US\$, or further lags of this variable as indicated in panel titles. Individual controls include weighted means of the variables gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table D3 – Migration flows and World Bank project disbursements, by state fragility status

	(1)	(2)	(3)	(4)
	Non-Fragile		Fragile	
	Migration flows *2008–2019*	Asylum seeker *2008–2019*	Migration flows *2008–2019*	Asylum seeker *2008–2019*
Panel A: Lag 1				
Disbursements	0.00029	-0.00052**	-0.00079	-0.00098
	(0.00021)	(0.00026)	(0.00073)	(0.00085)
F-stat	26.6	24.8	6.3	6.3
Panel B: Lag 2				
Disbursements	0.00070***	-0.00043	-0.00064	-0.00104
	(0.00024)	(0.00032)	(0.00065)	(0.00073)
F-stat	17.8	19.0	12.0	11.5
Panel C: Lag 3				
Disbursements	0.00073***	-0.00010	-0.00061	-0.00138
	(0.00027)	(0.00038)	(0.00073)	(0.00095)
F-stat	25.7	21.2	11.9	12.4
Panel D: Lag 4				
Disbursements	0.00070**	0.00031	-0.00018	-0.00070
	(0.00031)	(0.00040)	(0.00044)	(0.00063)
F-stat	16.4	16.1	46.3	46.0
Panel E: Lag 5				
Disbursements	0.00052*	0.00039	-0.00006	0.00001
	(0.00027)	(0.00025)	(0.00040)	(0.00055)
F-stat	11.4	13.4	80.8	81.9

Notes: This table presents the results from a eq. (4), where we split the sample by state fragility. Columns 1–2 report results for non-fragile states, columns 3–4 report results for fragile states. "Disbursements" measures one year lagged, annual, aggregated World Bank financial amounts disbursed in million, constant 2014 US\$, or further lags of this variable as indicated in panel titles. Individual controls include weighted means of the variables gender, age, age^2, education, urban dummy, and whether or not the household has a child. Standard errors are clustered at the country level: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.