Journal of Development Economics 110 (2014) 52–63

Contents lists available at ScienceDirect

Journal of Development Economics

journal homepage: www.elsevier.com/locate/devec

Out-migration, wealth constraints, and the quality of local amenities

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ARTICLE INFO

Article history:
Received 8 May 2013
Received in revised form 21 May 2014
Accepted 29 May 2014
Available online 4 June 2014

Keywords:
Migration
Wealth constraints
Migration intentions
Local amenities

ABSTRACT

The relation between income and migration intentions can be monotonically decreasing, increasing, or inverse U-shaped, dependent on the level of migration cost relative to wealth and if individuals are credit constrained. Using unique individual level data, covering countries in three geographic regions – sub-Saharan Africa, Asia, and Latin America – we show that migration intentions respond to individual wealth, and that the pattern differs across the country groups studied in a manner compatible with the predictions of our simple model. We also show that contentment with various dimensions of local amenities, such as public services and security, are key determinants of migration intentions.

1. Introduction

Although the drivers of migration have already been studied extensively (see, e.g., the excellent survey by Hatton and Williamson, 2002),[1] far less is known about the role of financial constraints on migration decisions. There is increasing evidence however that such constraints may be a key factor in shaping migration flows. For instance, a recent UNDP (2009) report argues that many potential migrants may be unable to finance their move.[2]

In this paper, we address how wealth may impact migrations in the presence of migration cost and credit constraints, a relation that we argue is far from clear cut. That is, although an increase in wealth may augment the migration possibilities of financially constrained individuals, it may simultaneously decrease the migration propensity of households with no wealth restrictions by raising their opportunity costs. As a result, the relation between wealth and migration may differ across countries depending on the distribution of wealth and migration cost. Our analysis also incorporates noneconomic factors as determinants of migration decisions, such as individuals' overall contentment with public services, security, or governance—factors shown by the literature on residential sorting and hedonic equilibrium to be of considerable value (Bayer et al., 2011).

We first develop a simple theoretical model, drawing on previous work by McKenzie and Rapoport (2007) that describes migration decisions when migration is costly and individuals are credit constrained. We illustrate that the level of migration cost relative to wealth determines the relation between wealth and migration intentions (monotonically decreasing, increasing, or inverse U-shaped),[3] meaning that the relation between wealth and migration may take different forms in different countries dependent on the location of the wealth distribution and migration cost. We also show that the propensity to migrate monotonically decreases with the level of contentment with the current location.

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[1] Most theories on bilateral migration movements emphasize "pull" and "push" factors with a particular focus on the potential increase in the value of individual human capital (Sjaastad, 1962). Nonetheless, recent empirical research also demonstrates the importance of noneconomic factors such as distance and cultural links (Belot and Hatton, 2008), language (Adsera and Pytlikova, 2012), demographic forces and network effects (Mayda, 2010), confidence in the home country's institutions (Lam, 2002), and violence in the destination country (Friebel et al, 2011).

[2] Financial constraints are found to restrain international migrations in studies by McKenzie and Rapoport (2007) and Angelucci (in press) for migrations between Mexico and the U.S., McDonald and Valenzuela (2012) for migrations from the Philippines, and Mendola (2008) for migrations from rural Bangladesh. Studies of internal migration also emphasize the existence of budget constraints (Phan and Coxhead, 2010, for Vietnam; Golgher, 2012, for Brazil; Chernina et al.,2014, for the late Russian Empire, and Andrienko and Guriev, 2004; Guriev and Vakulenko, 2013, for post-Soviet Russia). At the same time, Beegle et al. (2011) find no evidence that household wealth restricts migration in Tanzania, whereas Abramitzky et al. (in press) find a negative relationship between wealth and the probability of both internal and international migration in the analysis of historical mass migration from Norway to the US, and Mendola (2008) finds a negative relationship for internal migrations in Bangladesh.

[3] There is some evidence at the macro level for an inverse U-shaped relation between wealth and migration (see, e.g., de Haas, 2009; Hatton and Williamson, 2002). Such evidence is supported by the findings that emigration rates from poor and rich countries are lower than those from countries with moderate levels of development and that these rates tend to first increase and then decrease with development level (UNDP, 2009).

http://dx.doi.org/10.1016/j.jdeveco.2014.05.008
0304-3878/

Our main contribution, however, is empirical evidence on the relation between individual migration propensities and individual wealth, which bears out our model's predictions. We base this analysis on a unique data set, the Gallup World Poll (GWP), which is available for a large set of developing countries and contains information on individuals' intentions to move away from the area of current residence over the next 12 months. The data thus allow us to investigate international, but particularly domestic migrations for which few statistics exist. That is, although international migration rates are reasonably well estimated from national censuses and World Bank surveys (see Docquier and Marfouk, 2006), figures on internal migrations are scarce and cannot be constructed from available data (see Bell and Muhidin, 2009, for a discussion). Yet such an omission may be quite serious: whereas the number of international migrants estimated for 2010 totaled 214 million (United Nations, 2012), the number of internal migrants estimated for 2000 was over three times greater, perhaps as many as 740 million (see UNDP, 2009).

A further advantage of measuring intentions to migrate within the next 12 months instead of actual migrations is that it provides an assessment of the migration propensities for a representative set of individuals in each of the countries studied. A potential disadvantage, on the other hand, is that many of these planned migrations may not materialize. However, as Manski (1990) points out, survey responses on intentions represent best-point predictions of respondents' future behavior conditional on information known at the time of the survey. Manski thus stresses that the divergence between stated intentions and future realized behavior stems from the additional information received by the respondent after the intentions have been stated. The formation of intentions is thus important in its own right: analyses of migration intentions may lead to a better understanding of migrant selection by identifying subpopulations that consider migration as a possible future action.

Our empirical analysis focuses on three sets of relatively homogeneous countries: developing nations in sub-Saharan Africa, Asia, and Latin America. These countries differ, however, in level of economic development: the average GDP at purchasing power parity per capita in sub-Saharan countries is about half that in Asia and four times less than that in Latin America. These differences accord with the wealth index distributions that we construct from the GWP data for use in our analysis.

Our findings conform remarkably to the predictions of our simple model: whereas migration probabilities decrease with the individual wealth in Latin America (the richest region), they increase with wealth in Africa and Asia. We further find that local amenities (e.g. public services, security) play an important role in migration decisions. When we decompose the overall explained variation in migration plans by the different channels, contentment with various dimensions of local amenities turns out to be a far more important factor in shaping migration decisions than household wealth, a finding in line with Cai et al.'s (2014) evidence that subjective well-being is a better predictor of emigration intentions than household income quintiles.

This paper speaks to the literature on reasons for migrations (see Hanson, 2010, for a review), although rather than emphasizing the "push" and "pull" factors of migrations, as does most of that research stream, we focus on the cost of moving that may impede migration moves. In addition, unlike most existing papers, which rely on aggregate data (see, e.g., Clark et al., 2007) or consider bilateral movements (see, e.g., Belot and Hatton, 2008; Mayda, 2010), we use micro level data and examine the variation across individuals for a large number of countries.

The paper also relates to the few papers that discuss the possibility that budget restrictions may constrain migration movement (Abramitzky et al., 2013; Angelucci, in press; McKenzie and Rapoport, 2007; Sharma and Zaman, 2013). However, whereas these papers consider just one country and focus on international out-migrations, we illustrate the relation between wealth and migration plans regardless of destination for a large number of countries. We also analyze migration plans in conjunction with individual assessments of current location quality and the political and security situation in the original region of residence. Our work thus complements these existing studies by introducing a broader perspective that captures all (not just international) movements and incorporates a large array of subjective factors that drive migration plans. In addition, by emphasizing that the relation between wealth and migration plans depends on the overall wealth level of the country (i.e., the location of the wealth distribution) and may interact with other amenities, we offer a structure that can reconcile the differences in findings between previous papers (e.g. Abramitzky et al., 2013; Beegle et al., 2011; McKenzie and Rapoport, 2007) with respect to the wealth-migration relation.

Our paper also relates to a small but growing body of literature on migration intentions, with some such studies investigating migration intentions for one country (e.g., Burda et al., 1998; Uebelmesser, 2006; van den Berg and Weynandt, 2012, for Germany; Epstein and Gang, 2006, for Hungary; Papapanagos and Sanfey, 2001, for Albania), while others draw on data for several countries to compare migration plans across them (Drinkwater and Ingram, 2009; Fouarge and Ester, 2007; Liebig and Sousa-Poza, 2004). As the precise questions asked to measure migration intentions vary greatly between studies, comparisons across studies are difficult. We contribute to this literature, by investigating these associations for a large number of developing countries based on individual responses to identical questions on future migration plans. At the same time, by drawing on a far larger set of questions than most previous analyses, we can also highlight the important role of satisfaction with local amenities, public services and security in shaping intentions to move.

The remainder of the paper is organized as follows. Section 2 outlines our theoretical framework. Section 3 provides more details on our data and measures that we construct from survey questions. Section 4 discusses the aggregate relation between migration intentions and the GDP per capita. Section 5 presents our empirical strategy, reports our estimates on the association between wealth and contentment with local amenities and the intention to migrate, and explores the relationship between individual and country characteristics and the wealth threshold needed to enable the individual to pay for the cost of migration. Section 6 concludes.

2. Theoretical framework

This section presents a simple framework designed to demonstrate the basic intuition why wealth might have an ambiguous impact on migration decisions, whereas contentment with local amenities decreases out-migration intentions. As far as the impact of wealth on migration is concerned, the mechanisms and theoretical predictions that we point out here are very similar to those exposed by McKenzie and Rapoport (2007).[4] We make explicit and discuss in detail one of the predictions of their model that the relation between wealth and migrations might take any form – positive, inverse U-shaped, or negative – depending on the level of migration cost relative to wealth, and when individuals are credit constrained.

Assume that individuals decide whether to migrate by comparing the lifetime utilities of staying in the current location, and of migrating to the potential destination. The utility flow in each location depends on the current wealth which is a combination of the current income and assets (which may include land, housing, durable household goods, and financial assets), and the individual's overall contentment with local amenities (such as security, public services, institutions, and governance). We also assume that migration is costly, and that individuals are credit constrained. As the cost of migration is payable up-front,

[4] See also Bazzi (2013).

Table 1
Percentage of respondents reporting a likelihood of moving away from the city or area of residence over the next 12 months, by region.
Author calculations from the Gallup World Poll 2005–2006 using 2005 World Bank population data for country weights in the regional averages.

Region	Countries with available data	Mean	Min	Max
Asia	Afghanistan, Bangladesh, Cambodia, China[b], Indonesia[a], Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam	24.81%	11.65%	29.77%
Latin America and the Caribbean	Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador[a], Guatemala, Haiti[b], Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Trinidad and Tobago, Uruguay	20.60%	14.77%	32.49%
Sub-Saharan Africa	Angola, Benin, Botswana, Burkina Faso, Cameroon, Chad, Ethiopia, Ghana, Kenya, Madagascar[a], Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Togo[b], Uganda, Zambia, Zimbabwe	26.25%	9.73%	39.50%

Note: "National propensity to migrate" is calculated from the question on migration intentions in the Gallup World Poll 2005–2006: "In the next 12 months, are you likely or unlikely to move away from the city or area where you live?", and equals the share of respondents reported as being likely to move. Sample weights apply in national averages, which are then weighted using country populations 15 years of age or older to compute regional averages. If China is excluded, the average migration propensity in the Asian sample reduces to 15.36%, with the Philippines having the highest propensity to migrate at 23.28%.
[a] Country with the lowest average propensity to migrate.
[b] Country with the highest average propensity to migrate.

this leads to some individuals staying in their current location even if migration were the optimal choice.

We denote variables related to current place of residence and potential destination using the subscripts $k = h$ (home) and $k = d$ (destination). The utility flow u_k of an individual in either location depends on his wealth w_h and contentment with amenities offered in that location, s_k. We further denote unobserved factors that affect an individual's utility in either destination by the random variable ϵ_k, so that the flow of utility in location k is given by

$$u_k = w_k + s_k + \epsilon_k, k \in [h, d]. \quad (1)$$

Let C denote migration cost, which needs to be paid up-front, and could be financed from current wealth, or by borrowing. For the purpose of our analysis, we will not explicitly formalize the budget constraint of the individual (we only observe one cross section in our data), but we assume that the amount of capital the individual can rise to cover migration cost, f, increases in her overall wealth in the current location and does not depend on potential future wealth due to credit constraints. This leads to the following budget constraint:

$$f(w_h, \Gamma_1) \geq C(\Gamma_2), \quad (2)$$

where Γ_1 and Γ_2 measure individual specific circumstances that affect the relationship between w_h and the amount of capital available to the individual (such as family networks, etc.) and variations in the cost of migration, due to the characteristics of the intended move such as distance and time, destination characteristics such as cost of living, socio-economic characteristics such as age and education, and country characteristics.

Thus, the threshold for w_h above which the individual is able to cover migration cost is given by $w_h \geq T(\Gamma_1, C(\Gamma_2)) = T(\Gamma)$, where $\Gamma = (\Gamma_1, \Gamma_2)$. Individuals with w_h below the threshold T are not able to cover the cost of migration. Therefore, the individual decides to migrate if $u_d > u_h$,[5] subject to the constraint that $w_h \geq T(\Gamma)$, where T may vary across individuals due to characteristics of the home and destination location, and observed (such as age, education) and unobserved (such as preferences, ability) personal circumstances.

The probability of a migration is then given by

$$\Pr(Moving) = \Pr(u_d > u_h, w_h \geq T). \quad (3)$$

Note that even if migration is the optimal choice ($u_d > u_h$), individuals may not migrate if $w_h < T$, because they are credit constrained. Individuals who do not wish to move are therefore of two types: those unable to finance a migration and those who believe that their utility is higher in the region of current residence than in an alternative destination. It therefore follows that

$$\Pr(Staying) = \Pr(w_h < T) + \Pr(u_d \leq u_h, w_h \geq T). \quad (4)$$

This framework implies that the impact of wealth on the intention to move is ambiguous. On the one hand, increasing w_h relaxes the budget constraint in financing a migration and increases the propensity to migrate. On the other hand, a higher w_h also means foregoing better opportunities in the current location, which decreases migration propensities.[6] As a result, when migration cost is not binding, migration intentions will decrease with w_h. On the other hand, for poor households who are budget constrained, migration intentions may increase with w_h as this allows covering the cost of migration. Moving along the distribution of w_h, therefore, migration intentions may decrease throughout, or first increase and then decrease, or increase throughout, depending on the level of migration cost relative to w_h. In contrast to the ambiguity of migration intentions with regard to w_h, the model unequivocally predicts that migration probabilities decrease in s_h: people who are more satisfied with the area in which they live or who expect less amenities in the destination are less likely to migrate.

3. Data, sample, and descriptive statistics

Our empirical analysis is based on the first wave of the Gallup World Poll (GWP) collected in 2005 and 2006, a survey conducted in 129 countries with the goal of interviewing 1000 respondents in each country. Only in a few very small or very large countries are the target sample sizes smaller or larger, respectively. Respondents are at least 15 years old, and most country samples are probability based (i.e., with weights applied that are also used throughout this paper) and nationally representative of the resident population aged 15 years and older. Although certain areas in some countries could not be covered because of safety concerns, these regions account for less than 10% of the total target sample population (for more details on the GWP, see Online Appendix A). We complement these data with national statistics collected by the World Bank (2011). In our analysis, we focus on three regions – sub-Saharan Africa, Latin America, and Asia – but must exclude certain countries for which migration intention data are unavailable. We also exclude rich Asian countries like Singapore, South Korea, and Taiwan, as well as Hong Kong, in spite of data availability because our research focus is on developing countries. See Table 1 for the countries included in each of the three regional groups.

[5] Strictly speaking, we should subtract migration cost from the lifetime time utility in the destination, so that $u_d - \frac{C(\Gamma_2)}{N} \geq u_h$, where N is total lifetime. We assume that N is sufficiently large, so that $C(\Gamma_2)/N$ can be ignored.

[6] Recall that w_h consists of two components — current income of the individual and available assets. The individual foregoes future income in the original location in case of a migration. Assets may also be imperfectly transferrable between locations, for instance, in case of high transaction costs or if some of the assets are jointly owned with other family members that do not migrate. Moreover, even in case of a transfer, the purchasing power of the assets' monetary value may be much lower in the destination (when moving from rural to urban area for example). Further, as pointed out by McKenzie and Rapoport (2007), household wealth in form of arable land is illiquid.

The GWP contains a lot of information on individuals' current situation, including data on household possessions and assets, as well as assessments of different local and national amenities, including security, public services, institutions, and governance. It also provides information on individuals' intentions to move away from the area of current residence over the next 12 months. That constitutes GWP's advantage over collections of census data, such as IPUMS-International, for analysis of migration decisions. In GWP, respondents answer the same question on migration intentions approximately at the same time in all countries covered, whereas national censuses are conducted in different years, ask on migrations over different time periods, and phrase questions differently, which makes cross-country comparison very difficult. Further, GWP information on migration intentions is available for a larger number of countries than migration information in censuses, especially for sub-Saharan Africa. Most importantly, censuses ask for *past* migrations and economic well-being at the time of interview, while GWP asks for *future* migration intentions, which can then be related to current wealth and satisfaction with local amenities. Finally, censuses contain no data on individuals' contentment with amenities, which makes it impossible to investigate their role in migration decision.

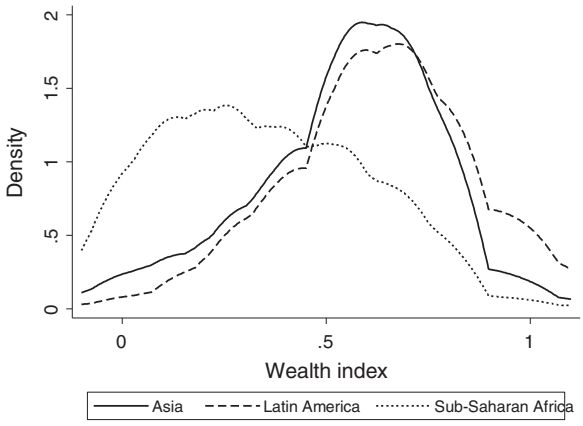

Fig. 1. Distributions of the wealth index, by region. *Note*: The wealth index is constructed across regions from survey questions on household assets and current income using polychoric principal component analysis. See Appendix for the list of variables and Online Appendix C for a description of the method. A higher value of the index indicates higher wealth.
Author calculations from the Gallup World Poll 2005–2006.

3.1. Migration intentions

Our main variable of interest is based on responses to the following question: "In the next 12 months, are you likely or unlikely to move away from the city or area where you live?" The possible answers are "likely to move," "unlikely to move," "don't know," and "refused to answer." The way the question is formulated suggests that people replying "likely to move" should have a strong inclination to migrate. Both the phrase "likely to move" and the relatively short time window of 12 months within which any intended migration response is placed make it likely that only individuals with developed migration plans answer affirmatively.[7] Also, it should be noted that the question on migration plans in the GWP data is formulated in such a way that it relates to movements both across and within national borders with no constraint imposed on the distance of the move. Nor does it distinguish between whether the intended move will be permanent or temporary. We may expect that the majority of migration plans reported in the GWP refer to internal movements, given that internal population flows are much larger than international ones (UNDP, 2009).

Overall, 19% of respondents in Asia and Latin America and 29% in sub-Saharan Africa reported being likely to move away from their current residence area over the next 12 months.[8] In Table 1, we list the countries with the lowest and highest average propensities to migrate in the three regions under study, together with the average propensities to move by region calculated from the countries with available data.[9,10] On average, one in four individuals expresses intention to move within the next 12 months in the Asian and sub-Saharan sample and one in five in the Latin American one. Cross-country differences are considerable, ranging from 9.73% in Madagascar to 39.5% in Togo.

The numbers reported in Table 1 are quite high compared to existing statistics on actual migrations, which are usually constructed from census data. Note however that census data heavily undercount short-distance and temporary migrations (i.e. internal migrations that are at least three times more frequent than international ones), whereas the GWP question on migration plans is phrased in such a way that any intention to migrate will be counted regardless of distance and duration. On the other hand, GWP most probably overstates the number of migrants, because not all migration intentions will be realized. For further discussion on the correspondence between intentions data and actual migration flows, see Online Appendix B.

3.2. Measures of the current situation

3.2.1. Wealth index

We construct a measure of household wealth based on data on household assets (household ownership of durable consumer goods and housing quality), and questions referring to sufficiency of current income.[11] Our index is conceptually very close to the DHS wealth index developed by the MEASURE Demographic and Health Surveys (DHS) Project in cooperation with the World Bank, which, using information on assets, places individual households on a continuous scale of relative wealth in countries that lack reliable data on income and expenditures.[12] We construct our index slightly different by following

[7] The questions in the GWP are much stricter in eliciting a positive response only from those who do have developed migration plans, in comparison with other surveys containing questions on migration intentions. For instance, the International Social Survey Programme, 1995 asks: "If you could improve your work or living conditions, how willing or unwilling would you be to move to [another neighborhood/village; town/city; county; another country]?" The phrase "willing to move" and the absence of a time frame do not require concrete migration plans to answer this question in the affirmative, in contrast to the Gallup question. Work by the European Commission (2010) emphasizes the importance of setting a time window in such surveys: only 12% of European citizens, responding affirmatively to the question "Do you envisage working in a country outside [OUR COUNTRY] at some point in the future?", say in subsequent responses that they are likely to work abroad within the next 12 months, while 35% are unsure about when they will work abroad, 22% say in 3–5 years and 18% even later.

[8] Response frequencies are detailed in Table F1 of Online Appendix F.

[9] We drop respondents that refused to answer the question on migration intentions, which is 0.17% of the overall sample.

[10] In calculating the regional averages, we weight the average propensities to migrate for each country by its population of individuals 15 years of age or older to make sure that the figures are representative for the adult populations in these regions. We use World Bank country population data on the total population P^{total} (number of inhabitants) and the shares of the population between the ages of 15 and 64 (s^{1564}) and 65 and above ($s^{>64}$), both measured in % of total in 2005. The sample weight for country j, w_j, is thus given by $w_j = \frac{s_j^{1564}+s_j^{>64}}{100} P_j^{total}$

[11] In GWP, household income is reported for less than half the countries in which the migration question is asked.

[12] See Rutstein and Johnson (2004) for a discussion on the difficulties of measuring income in poor countries.

Table 2
Distributions of the constructed indices.
Author calculations from the Gallup World Poll 2005–2006 using 2005 World Bank population data for country weights in the regional averages.

Index	Asia				Latin America				Sub-Saharan Africa			
	Q1	Q2	Q3	Mean	Q1	Q2	Q3	Mean	Q1	Q2	Q3	Mean
Wealth index	0.403	0.675	0.675	0.549	0.528	0.675	0.675	0.628	0.107	0.378	0.528	0.343
Contentment with local public services	0.562	0.765	0.934	0.730	0.474	0.696	0.876	0.670	0.376	0.575	0.842	0.574
Area security	0.774	1	1	0.891	0.774	0.774	1	0.756	0.639	0.774	1	0.773
Contentment with personal living standard	0.346	0.810	1	0.673	0.473	0.810	1	0.708	0.156	0.473	1	0.518
Confidence in the country's institutions	0.454	0.703	0.908	0.673	0.277	0.469	0.721	0.505	0.261	0.480	0.808	0.523
Perception of the current country's situation compared to that five years ago	0.400	0.500	0.598	0.485	0.353	0.498	0.598	0.475	0.304	0.447	0.545	0.424
Expectations for the country's situation in five years compared to that today	0.444	0.575	0.675	0.553	0.444	0.588	0.719	0.568	0.407	0.544	0.688	0.535

Note: The indices are constructed across regions from survey variables using polychoric principal component analysis. See Appendix and Online Appendix D for the list of variables, and Online Appendix C for a description of the method. Sample weights are applied in the estimation. A higher value of an index indicates a better situation. Q1, Q2, and Q3 stand for the first, second, and third quartile respectively.

Kolenikov and Angeles's (2009) polychoric principal component approach.[13] The choice of retained variables was dictated by balancing the number of variables and the number of observations in the estimation sample, because variables may be missing for some countries (see Appendix for the list of questions). The first component for the 7 variables retained explains 58% of their total variance. We scale the first component to lie between 0 and 1. A higher value of the index indicates higher wealth.

The regional distributions and descriptive statistics for the resulting wealth measure are outlined in Fig. 1 and Table 2, respectively. For Asia and Latin America, the index is similarly distributed, with more weight on relatively high wealth and a mean around 0.6, while for Africa, the index is shifted to the left, with a high density at low wealth levels (and a mean of 0.34).

3.2.2. Contentment with local amenities and perceptions of country's overall situation

Next, we construct a set of measures of respondents' contentment with amenities in their current location using the same polychoric PCA procedure as described above. Online Appendix D.1 lists the survey questions used to gather respondents' opinions on public services available in the residence area, such as health care, schools, and air quality, while Sections D.2 and D.3 of Online Appendix list questions used to construct indices of contentment with area security and individual's living standard. We also report the proportion of variation in survey responses explained by the indices.

In addition to amenities available at the local level, individuals also consider country-level factors when deciding whether to migrate. Accounting for that, we construct an index of the quality of a country's institutions based on questions measuring individuals' confidence in the country's government, judicial system, media, and so forth (see Online Appendix D.4 for details).

Finally, because beliefs about future developments and changes from the past to the present factor into the dynamics of migration decisions, we construct two variables that capture individual perceptions of the *change* in a country's overall situation. We base these variables on three survey questions asking respondents to rate the country's current situation compared to five years ago and the expected situation five years into the future (Sections D.5 and D.6 of Online Appendix). From this information, we construct two measures: individual perceptions of the current situation compared to that five years ago and individual expectations for the situation in five years compared to that today.

The overall distributional statistics for these different indices are reported in Table 2. In general, the level of contentment with amenities is lower for the African sample, while the levels for the Asian and Latin American samples are similarly distributed. For instance, Africa has a lower mean and a higher variance than Asia and Latin America on the index of contentment with local public services. Asia has the highest value on the index of confidence in the country's institutions: the average value of the index is 0.67 on a 0 to 1 scale in Asia compared to the average slightly above 0.5 in Latin America and Africa. In terms of the country's current situation compared to the past the responses are most optimistic in Asia and most pessimistic in Africa. Individuals in all three regions have similar expectations regarding their country's overall situation over the next five years, with a mean index value of about 0.55.

4. Overall migration intentions and GDP per capita

To obtain an initial idea of how migration propensities are related to wealth for each of the three country groups considered, in Fig. 2, we plot the mean migration intentions (by country) against 2005 GDP at purchasing power parity per capita, measured in thousands of international dollars. The first graph in the upper left corner of the figure pools all 98 countries for which the GWP provides information on migration intentions. The other three panels correspond to the three groups of countries that are the focus of this paper, and which differ in terms of GDP per capita. Specifically, at purchasing power parity, the mean GDP per capita of the countries considered in this paper is 2034 international dollars in Africa, 3788 in Asia, and 7467 in Latin America.

Fig. 2 clearly shows that the relation between migration intentions and GDP per capita is inverse U-shaped overall; however, at the regional (and thus more homogeneous) level, migration intentions increase with GDP per capita in poorer Africa and Asia but decrease with GDP/capita in more developed Latin America. These figures thus point to income levels having a nonlinear association not only with international emigration rates, as documented in the existing literature (for an overview, see UNDP, 2009), but also with overall migration intentions, both internationally and internally.

5. Empirical setup and results

To estimate how out-migration intentions away from the current area of residence over the next 12 months relate to wealth (measured by the index described above) and to the set of amenity measures discussed in Section 3, we estimate linear probability models of the following type[14]:

$$M_{ij} = \alpha + X_{ij}\beta + f\left(W_{ij}, \gamma\right) + S_{ij}\delta + \theta_j + \epsilon_{ij}, \quad (5)$$

[13] In essence, this method assumes that the observed ordinal variables are underlain by unobserved, continuous, normally distributed variables whose correlation matrix can be decomposed using principal component analysis (PCA). The first principal component is then used as an aggregate index. See Online Appendix C for a more detailed description of this approach.

[14] Nonlinear models, such as probit or logit models, give very similar results.

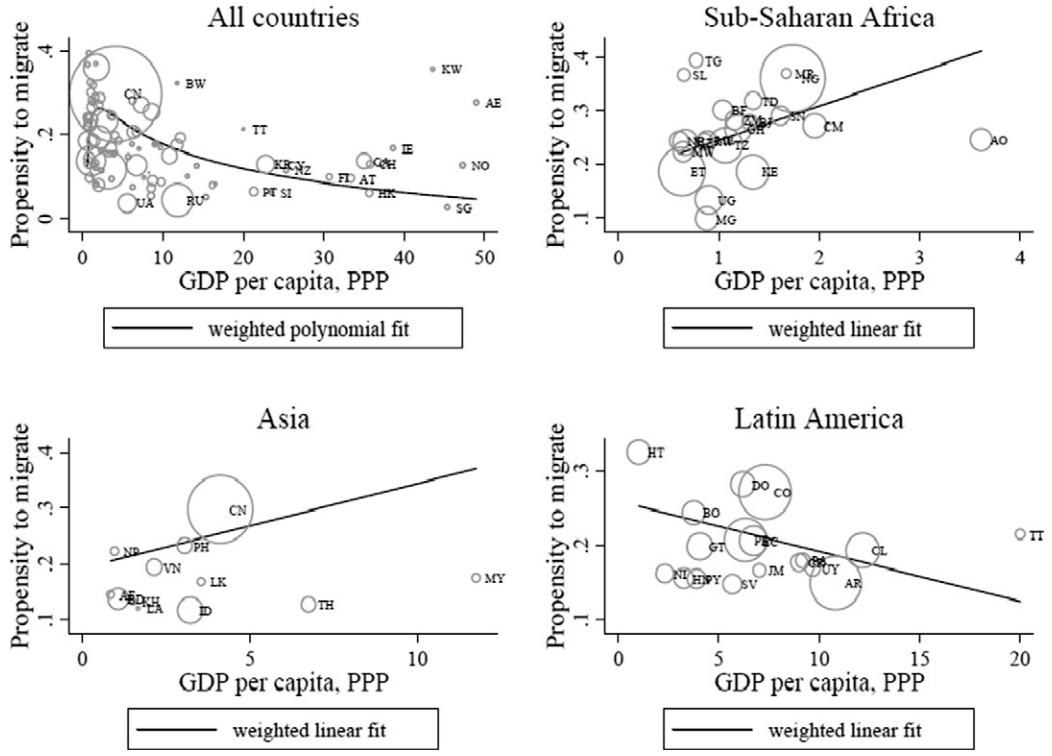

Fig. 2. Average migration intentions and GDP at purchasing power parity per capita. *Note*: The "Average national propensity to migrate" is calculated from the question on migration intentions in the Gallup World Poll 2005–2006 "In the next 12 months, are you likely or unlikely to move away from the city or area where you live?" and measures the share of respondents reported as being likely to move. The GDP at purchasing power parity (PPP) per capita is measured in 2005 thousands of international dollars, and extracted from the online World Bank database. The 2005 Country populations 15 years of age or older, also from the World Bank database, are used as weights and define the size of the circle. All 98 countries for which information on migration intentions is available in the Gallup World Poll are plotted in the pooled graph. Two outliers, South Africa and Botswana, are omitted from the African graph; however, this omission does not affect the slope of the regression line. Country codes are as in ISO 3166 "Codes for the representation of names of countries and their subdivisions."

where M_{ij} is an indicator variable equal to 1 if individual i in country j believes that a migration over the next 12 months is likely, X_{ij} are observable individual characteristics, $f(W_{ij})$ is a function of the wealth index, with parameter vector γ, S_{ij} is a vector of contentment with local amenities, θ_j is country fixed effect, and ϵ_{ij} are unobservables. We estimate Eq. (5) separately for each group of countries, and all our regressions condition on observed demographic characteristics such as gender and age.

5.1. Individual migration intentions and wealth

Table 3 summarizes the marginal effects of the regressors for the most general specification.[15] We use a second order polynomial for the wealth measure, and reported coefficients are calculated at the regional sample means.[16] Columns 1–3 report the marginal effects; columns 4–6 show the impact of a one standard deviation change in each of these indices on migration intentions. The marginal effect of the wealth index on migration intentions at the mean is positive and significant for Asia and sub-Saharan Africa, but slightly negative and insignificant for Latin America. A one standard deviation increase in the index (again evaluated at the mean and specific to each of the three regions) increases the probability that an individual intends to emigrate by 3.1 percentage points in Africa and 1.9 percentage points in Asia.

To illustrate the impact of wealth along the wealth distribution for each of the three regions, in Fig. 3, we plot the predicted migration propensities along the entire distribution of the wealth index for both the absolute index values (panel A) and the percentiles of the index distribution (panel B). These figures are computed at the *regional* sample means of all other variables in both panels and the respective parameter estimates.

As the figures illustrate, the association between wealth and migration intention varies widely across regions. More specifically, the likelihood of an intention to move increases with the wealth index in Africa and Asia but decreases slightly in Latin America, with similar patterns both along the index itself (panel A) and along the percentiles of the index distributions (panel B). Given that our model predicts a positive slope for the wealth-migration profile when migration cost is high relative to current wealth but a possible negative slope when cost is relatively low, the regression results clearly point to the presence of budget constraints restricting migration of the relatively poor in Asia and sub-Saharan Africa. Such restrictions, however, seem to be less important in Latin America, where migration intentions tend to slightly decrease with wealth (albeit with a statistically insignificant negative slope). The results are in line with the sizeable differences in the GDP between Asia and sub-Saharan Africa, on the one hand, and Latin America, on the other (as discussed in Section 4), and with the differences in the distribution of the wealth index between these regions (see Fig. 1).

Panel B of Fig. 3 enables comparison of individuals with the same position on the *regional* wealth distribution across the three different groups of countries. The figure shows that, although the benefits from moving are far higher in sub-Saharan Africa, the poor in Latin America (the first 10 percentiles of the wealth distribution) have the same propensity to migrate as the poor in Africa. In Asia, on the other hand, we observe a steep increase in migration propensity with wealth in the

[15] Detailed estimates of the underlying regressions are given in Appendix in Tables A1, A2, and A3, which present the results for each of the three country groups and for different specifications. These results clearly show that omitting the indices on contentment with the local amenities leads to lower estimates of the wealth coefficients.

[16] We have experimented with higher order polynomials, but the results are very similar to those we report in the table.

Table 3
Marginal effects and effects of a one standard deviation change calculated from an OLS regression.

Variables	Marginal effects			Effect of 1 SD change		
	Asia	Latin America	Sub-Saharan Africa	Asia	Latin America	Sub-Saharan Africa
Male	0.005	0.025**	0.014			
	(0.013)	(0.012)	(0.014)			
Age/10	−0.025***	−0.038***	−0.047***			
	(0.004)	(0.003)	(0.005)			
Wealth index[a]	0.090**	−0.039	0.136***	0.019**	−0.008	0.033***
	(0.038)	(0.033)	(0.036)	(0.008)	(0.007)	(0.009)
Contentment with personal living standard	−0.069***	−0.108***	−0.096***	−0.023***	−0.034***	−0.035***
	(0.023)	(0.022)	(0.025)	(0.008)	(0.007)	(0.009)
Contentment with local public services	−0.128***	−0.153***	−0.266***	−0.030***	−0.041***	−0.079***
	(0.032)	(0.026)	(0.032)	(0.008)	(0.007)	(0.009)
Area security	−0.120***	−0.096***	−0.100***	−0.023***	−0.026***	−0.027***
	(0.038)	(0.024)	(0.026)	(0.007)	(0.007)	(0.007)
Perception of the current country's situation compared to that five years ago	−0.096	−0.046	0.051	−0.014	−0.008	0.008
	(0.072)	(0.049)	(0.079)	(0.011)	(0.009)	(0.013)
Expectations for the country's situation in five years compared to that today	0.056	0.063	0.066	0.010	0.013	0.013
	(0.057)	(0.043)	(0.064)	(0.010)	(0.009)	(0.013)
Confidence in the country's institutions	0.007	0.074***	−0.001	0.002	0.021***	−0.000
	(0.025)	(0.024)	(0.027)	(0.007)	(0.007)	(0.009)
Observations	7415	10,958	16,247			
R-squared	0.049	0.060	0.083			
Wealth significance test: F	4.86	0.98	7.48			
Wealth significance test: *p*-value	0.008	0.374	0.001			

Note: The dependent variable equals 1 if the individual is likely to move away from the current place of residence over the next 12 months and 0 otherwise. The indices are constructed across regions from survey variables using polychoric principal component analysis (see Appendix and Online Appendix D for the list of variables, and Online Appendix C for a description of the method). A higher value of an index indicates a better situation. All models control for country fixed effects. Sample weights are applied in the estimation. Robust standard errors in parentheses.

[a] At the regional sample mean.

*** $p < 0.01$.

** $p < 0.05$.

* $p < 0.1$.

first two deciles of the wealth distribution, which reflects the severe constraint that migration cost imposes – in conjunction with credit constraints – on migration below the 20th percentile of the wealth distribution. Above the 20th percentile, the profile continues to increase, but with a smaller slope. For the African region, the profile is steep over the entire wealth distribution, suggesting that migration cost is a severe constraint throughout. This finding is very much in line with the far lower average per capita GDP in Africa, as well as the location of the wealth distribution shown in Fig. 1 above.

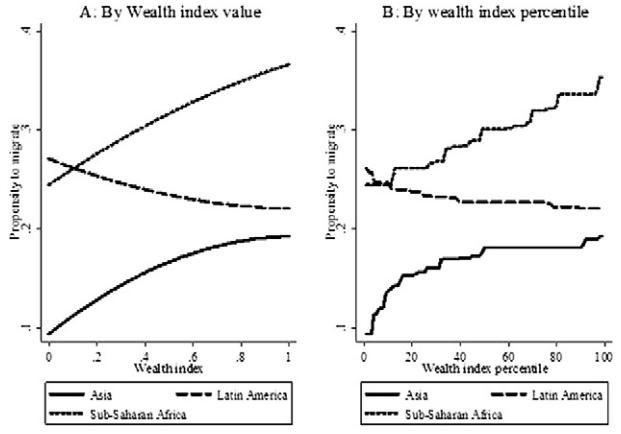

Fig. 3. Predicted propensity to migrate along the wealth index support. *Note*: The wealth measure is constructed across regions from survey questions on household assets and current income using polychoric principal component analysis. A higher value of the index indicates higher wealth. See Appendix for the list of variables and Online Appendix C for a description of the method. The figure plots the predicted propensity to migrate, evaluated at the sample mean of all other variables, along the whole support and against the percentiles of this index. Predictions are calculated using the estimates from the OLS regression of the migration-intention indicator on the full set of controls (specification 6 in Tables A1, A2, and A3 in Appendix).
Author calculations from the Gallup World Poll 2005–2006.

5.2. Migration intentions and local amenities

Table 3 also reports the results for the various measures of contentment with local amenities – specifically, satisfaction with personal standard of living, local public services, and security – all of which have a strong and significantly negative impact on migration intentions for all three regions.[17] Overall, the magnitude of the impact of a one standard deviation increase in each of these measures is nearly as large as (and sometimes even larger than) the magnitude of the impact of a one standard deviation increase in wealth for Asia and sub-Saharan Africa and far larger for Latin America, where the wealth constraint seems not to be binding. The most striking case is sub-Saharan Africa, where individuals located at the extreme ends of the contentment with local public service distribution show a 27 percentage point difference in their likelihood to move within the next 12 months. In the Asian and Latin American samples, this difference, although smaller, is still substantial at 13 and 15 percentage points, respectively. Likewise, area safety turns out to be an important factor for migration decisions, with migration intentions decreasing by 2.5 percentage points in response to a one standard deviation increase in this index. Satisfaction with personal living standard also has approximately the same impact on intention to move in all three regions (migration intentions decrease by 2.5–3.5 percentage points in response to a one standard deviation increase in this index), whereas local public services and security seem to play a larger role in sub-Saharan Africa. There, when the index of satisfaction with local public services increases by one standard deviation, migration propensity falls by 8 percentage points, twice as large a drop as in Latin America and almost thrice as large as in Asia (see our discussion below).

Also interesting is the relation between migration intention and perceived past and expected future changes in the country of origin's

[17] Adding higher order polynomials into these amenity measures barely changes the slopes at the mean.

Table 4
Relative contribution of explanatory variables to overall variation in migration intentions.

Factor	Asia	Latin America	Sub-Saharan Africa
Wealth index	10.15%	4.96%	4.07%
Satisfaction with personal living standard	19.45%	33.01%	20.46%
Subtotal: wealth factors	29.60%	37.96%	24.53%
Contentment with the local public services	38.35%	36.43%	60.29%
Area security	24.81%	19.16%	9.21%
Subtotal: residence area factors	63.16%	55.59%	69.50%
Perceptions of the change in a country's overall situation	4.98%	1.93%	1.82%
Confidence in the country institutions	2.26%	4.52%	4.16%
Subtotal: country factors	7.25%	6.45%	5.98%
Total	100%	100%	100%

Note: The indicator of migration intentions equals 1 if the individual is likely to move away from the current place of residence over the next 12 months and 0 otherwise. The table shows the contributions of explanatory variables to the gain in the R-square in the full model (specification 6 in Tables through A1–A3 in Appendix) in comparison to a linear regression of the indicator of migration intentions on gender, age, and country fixed effects. The gain in the R-square between two specifications is decomposed using the Shapley approach (Shorrocks, 2013).

overall institutional situation. Not only do we find a weak relation between migration intentions and individuals' beliefs about the country's future situation, but the quality of a country's institutions seems to matter little for migration decisions in Asia and sub-Saharan Africa. We do, however, find a highly significant association between migration intention and institutional quality for Latin America: a one standard deviation increase in the index is associated with a 2.1 percentage point increase in the probability of an intention to migrate over the next 12 months.

Overall, these results suggest that contentment with several dimensions of local amenities is a very important driver for intentions to migrate away from ones' area of residence, conditional on individuals' wealth. Such contentment measures have rarely been used in previous studies, and the findings suggest that they may play a far more important role for migrations, and relative to wealth, than previously thought.

5.3. Relative contribution of variables in explaining migration intentions

One way to assess the relative importance of these different factors in determining migration plans is to decompose their explanatory contribution to the overall explained variation of the regression (the R^2). To do so, as suggested by Shorrocks (2013), we use a Shapley-based decomposition of the full model R^2 (column 6 in Tables A1 to A3 in Appendix) relative to a model that controls only for demographic characteristics and country fixed effects.[18] The decomposition results are reported in Table 4, which distinguishes between three groups of factors: (i) wealth/living standard, (ii) amenities related to the local residence area, and (iii) amenities related to the country overall. We find that in no region wealth makes a sizeable contribution to the explained variance in migration intention, whereas respondents' satisfaction with their current area of residence accounts for 56%, 63% and 70% of the total explained variation in the desire to move in Latin America, Asia and sub-Saharan Africa respectively.

Overall, our results illustrate that, on the one hand, wealth plays an important role for migration decisions: there is strong evidence, for example, that, particularly in poorer regions and at lower parts of the wealth distribution, poverty restrains individual's migration plans. On the other hand, the results also emphasize the importance of local amenities in shaping these intentions and decisions—a dimension that has been less emphasized in much of the previous literature on the drivers of migration, perhaps due to problems in measurement. Whereas wealth and living standard together are clearly important, safety and satisfaction with local amenities and public services plays an even more important role. These findings should have important implications for assessment of migration flows, suggesting that safety and satisfaction with local amenities should – besides wealth creation – be an important goal of regional development.

5.4. Estimating the wealth threshold

Our findings, interpreted through the lens of our model, highlight a key role of the wealth threshold, below which individuals are constrained from pursuing a migration, for the observed relationship between wealth and migration. In this section, we explore further how the wealth threshold, T, which is a function of migration cost and credit constraint, depends on individual and country characteristics. For instance, it could well be that the cost of migrating varies regionally, depending on infrastructure and travel possibilities, or that this cost differs by gender. Likewise, individuals of different ages might engage in different types of migrations (e.g., young individuals moving alone; older individuals moving with their families), choose different types of moving arrangements (e.g., older individuals taking more possessions than the young), or have access to networks with different resources and availability of credit. All these possibilities would lead to variations in the wealth threshold above which migration becomes a feasible option.

In principle, the wealth threshold and its dependence on observable characteristics could be estimated using the structural model implied by Eqs. (3) and (4) and derived in Section 2. However, doing so would require measures of utility and current wealth at home (u_h and w_h), as well as utility at the desired destination u_d, information that is usually either totally unobserved (such as u_d) or only partially observed in the data. Nevertheless, in the belief that structural estimation may still provide some interesting insights into the heterogeneity of the wealth threshold, we here propose a possible estimation strategy, which we illustrate using data for sub-Saharan Africa.[19]

For this estimation, we treat the utility in the desired destination, u_d, as an unobservable random variable that is normally distributed with mean 0 and standard deviation 1. We then proxy the utility at the current location, u_h, using responses to questions on life satisfaction today and five years previously.[20] The proxy for the current utility is then the first principal component constructed from these two questions, normalized to lie between −0.5 and 0.5.

We assume that the wealth threshold above which migration is feasible, introduced in Section 2, changes with demographic (X) and country (Z) characteristics and unobservables ζ: $T = \bar{T}(X,Z) + \zeta$.[21] Because w_h is scaled between 0 and 1 (see Section 3), we also normalize the average wealth threshold to lie between 0 and 1: $\bar{T}(X,Z) = 1/(1+\exp(X\beta + Z\gamma))$, where β and γ are parameter vectors. Our econometric model explaining the likelihood to migrate is then

$$\begin{aligned} \Pr(M=1) &= \Pr\left(u_d > u_h; \zeta \le w_h - \bar{T}(X,Z)\right) \\ \Pr(M=0) &= 1 - \Pr(M=1) \end{aligned} \tag{6}$$

[18] See Online Appendix E for details.

[19] Identification of the structural model depends on the quality of the measure of wealth. For the sub-Saharan sample, more variables for the construction of the wealth index are available than for Latin America and Asia. We here add these variables to construct the index; they include main sanitation facility, cooking fuel, and source of drinking water that the household uses.

[20] The exact wording of these questions is as follows: "Please imagine a ladder with steps numbered from zero at the bottom to ten 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 (you stood 5 years ago), 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?"

[21] As the majority of migration intentions in GWP refer to internal migrations, country characteristics relateto respondents' home countries. The wealth threshold should also depend on the distance and time of themove and the type of destination: these are included in the unobservables in our setting, as we have noinformation on the intended moves in our data.

with

$$(u_d, \zeta) \sim N(0, \Sigma); \Sigma = \begin{pmatrix} 1 & \sigma_{u_d\zeta} \\ \sigma_{u_d\zeta} & \sigma_\zeta^2 \end{pmatrix}.$$

We estimate this model using the maximum likelihood method. We include gender and age in X; to account for both country geography and its level of economic development, Z includes GDP per capita, total land surface, population density, agricultural land per capita, and road density.

Table 5 shows the average impact of a one unit increase and a one standard deviation increase in the explanatory variables on the wealth threshold, T, evaluated at the regional sample means of all other variables. We find that the wealth threshold above which migration becomes an option is higher for females and older people: at the sample mean (34 years), a one-year increase in age increases the wealth threshold by 0.02 points, while a one-standard deviation increase (15 years) increases it by 0.42. The wealth threshold is estimated to be lower when the country has more arable land, roads, and a denser population, which seems plausible. The negative coefficient on total land area is harder to justify, as longer distances could be expected to make migrations costlier. One possible explanation might be that people living in small countries engage more often in international migrations that are more expensive than internal movements. We find only a weak relation between a country's economic development and the average wealth threshold.

6. Conclusion

This paper investigates how wealth constraints can restrict individual migration, particularly at the low end of the wealth distribution, an important question for assessing the migration intensities induced by wealth creation in some of the world's poorest areas. As a first step, we develop a simple framework that illustrates the dual role of wealth and the importance of credit constraints in the decision to migrate. In the absence of the possibility to indebt against future income, even if individuals may find it optimal to migrate, credit constraints may lead them not to be able to cover the migration cost. Then, on the one hand, an increase in wealth alleviates budget constraints; on the other, the further up the wealth distribution an individual is situated, the lower is the relative gain from migration. We illustrate that this simple model can generate any relation between migration and wealth dependent on the level of migration cost relative to wealth. In particular, we show that that for very poor countries, where the wealth constraint is most likely to be binding, migrations will increase along the wealth distribution, while the opposite may be the case for richer countries.

Our empirical analysis is based on a unique and as yet little explored data source, the Gallup World Poll, which asks individuals in a large number of countries about their migration intentions and provides information that enables the construction of indices on individual wealth and contentment with local amenities. We show that whereas migration intentions increase along the wealth distribution in sub-Saharan Africa and Asia, they are not much affected by wealth in the richest region, Latin America. Through the lens of our model, this finding is compatible with the interpretation that wealth constraints are not binding in the latter region but are binding in the former two.

We also find that contentment with local amenities like security and public services is very important for migration intentions in all the regions considered, but particularly so in sub-Saharan Africa. This observation suggests that the quality of local amenities – including such varied components as security, public services, transport infrastructure, and housing – is a very important channel through which migration plans are affected.

Table 5
Effect of individual and country characteristics on the wealth threshold T, sub-Saharan Africa.

Variable	(1)		(2)	
	Marginal effect	Effect of 1 SD change	Marginal effect	Effect of 1 SD change
Male[a]	−0.161*		−0.174	
	(0.096)		(0.113)	
Age	0.026***	0.475***	0.028***	0.347***
	(0.008)	(0.089)	(0.005)	(0.065)
Arable land	−0.213**	−0.072**	−0.419***	−0.105***
(hectares per person)	(0.107)	(0.035)	(0.136)	(0.036)
Road density	−0.223**	−0.074**	−0.450***	−0.076***
(km of road per sq. km of land area)	(0.114)	(0.031)	(0.132)	(0.027)
Population density	−0.187**	−0.141***	−0.289***	−0.183***
(hundred of people per sq. km of land area)	(0.079)	(0.050)	(0.058)	(0.041)
Land area	−0.127***	−0.057**	−0.158	−0.057
(mln. sq. km)	(0.048)	(0.026)	(0.098)	(0.041)
GDP per capita, PPP	−0.056	−0.067	−0.105	−0.092*
(constant 2005 international 1000$)	(0.039)	(0.070)	(0.071)	(0.048)
σ_ζ^2	0.919***		0.750***	
	(0.190)		(0.148)	
σ_ζ	0.959***		0.866***	
	(0.099)		(0.086)	
Correlation of unobservables	−0.398***		−0.590***	
$(\sigma_{u_d\zeta}/\sigma_\zeta)$	(0.103)		(0.127)	
Wald χ_8^2	40.60***		48.48***	
Observations	16,027		14,254	

Note: The table is based on the results of estimation of the model in Eq. (6). Marginal effects are calculated at the sample means of all other variables. Model (1) (columns 2, 3) is estimated on all sub-Saharan countries for which the wealth index can be constructed using the GWP data, and Model (2) (columns 4, 5) excludes Botswana and South Africa, as these are outliers in GDP per capita. In Model (1), a one standard deviation increase corresponds to an increase from the sample mean of 34 to 49 years for age, 0.28 to 0.43 for arable land per person, 0.17 to 0.26 for road density, 0.84 to 1.39 for population density, 0.80 to 1.16 for land area, and 2.42 to 4.97 for GDP per capita at purchasing power parity. In Model (2), one standard deviation increase corresponds to an increase from 34 to 49 years for age, 0.28 to 0.44 for arable land per person, 0.15 to 0.23 for road density, 0.91 to 1.47 for population density, 0.73 to 1.08 for land area, and 1.45 to 2.04 for GDP per capita at purchasing power parity. Sample weights are applied in the estimation. Robust standard errors in parentheses.

[a] Discrete change from 0 for female to 1 for male.

*** $p < 0.01$.

** $p < 0.05$.

* $p < 0.1$.

Taken together, these findings have important policy implications. Relaxing wealth constraints through economic development in the poorest countries, such as many nations in sub-Saharan Africa, will allow more individuals to cover their migration cost, which may lead to more migrations. On the other hand, improving local amenities, such as local infrastructure, public services, and safety conditions, could be a powerful tool to incite people to stay in their local area. Thus, to relieve migration pressure on developed nations, development policies should aim not only at enhancing wealth, but also at providing local infrastructures, public services, and security.

Acknowledgements

The authors acknowledge financial support by the NORFACE Programme on Migration. Christian Dustmann also acknowledges support by an ERC Advanced Grant 323992 (DMEA).

Appendix A.

Questions used to construct a wealth index

- Does your home have a television?
- Does your home have a computer?
- Does your home have access to the Internet?
- Does your home have electricity?
- Have there been times in the past 12 months when you did not have enough money to buy food that you or your family needed?
- Have there been times in the past 12 months when you did not have enough money to provide adequate shelter or housing for you and your family?
- Have there been times in the past 12 months when you or your family have gone hungry?

The wealth index is the first principal component of the listed GWP survey questions, computed using polychoric principal component analysis (see Online Appendix C for a description of the method). Sample weights are applied in the estimation. A higher value of an index indicates a better situation. Proportion of variance explained by the first component is 0.58.

Table A1
OLS regression estimates on the Asian sample.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Wealth index	0.076	0.051	0.102	0.177*	0.192*	0.193*
	(0.098)	(0.098)	(0.101)	(0.102)	(0.103)	(0.103)
Wealth index squared	−0.019	−0.008	−0.022	−0.083	−0.094	−0.094
	(0.101)	(0.100)	(0.101)	(0.101)	(0.102)	(0.102)
Male		0.008	0.006	0.005	0.005	0.005
		(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Age/10		−0.027***	−0.027***	−0.025***	−0.025***	−0.025***
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Contentment with living standard			−0.086***	−0.065***	−0.069***	−0.069***
			(0.023)	(0.023)	(0.023)	(0.023)
Contentment with local public services				−0.130***	−0.126***	−0.128***
				(0.031)	(0.031)	(0.032)
Area security				−0.122***	−0.119***	−0.120***
				(0.038)	(0.038)	(0.038)
Perception of the current country's situation compared to that five years ago					−0.097	−0.096
					(0.071)	(0.072)
Expectations for the country's situation in five years					0.059	0.056
					(0.058)	(0.057)
Confidence in the country's institutions						0.007
						(0.025)
Observations	7415	7415	7415	7415	7415	7415
R-squared	0.022	0.033	0.038	0.048	0.049	0.049
Wealth significance test: F	1.66	0.89	2.87	4.43	4.83	4.86
Wealth significance test: *p*-value	0.190	0.410	0.057	0.012	0.008	0.008

Note: The dependent variable equals 1 if the individual is likely to move away from the current place of residence over the next 12 months and 0 otherwise. The indices are constructed across regions from survey variables using polychoric principal component analysis (see Appendix and Online Appendix D for the list of variables, and Online Appendix C for a description of the method). A higher value of an index indicates a better situation. All models control for country fixed effects. Sample weights are applied in the estimation. Robust standard errors in parentheses.

*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

Table A2
OLS regression estimates on the Latin American sample.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Wealth index	−0.268**	−0.232**	−0.132	−0.091	−0.095	−0.096
	(0.117)	(0.117)	(0.117)	(0.117)	(0.117)	(0.117)

(continued on next page)

Table A2 (*continued*)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Wealth index squared	0.170*	0.117	0.083	0.033	0.038	0.045
	(0.095)	(0.096)	(0.095)	(0.096)	(0.095)	(0.095)
Male		0.023*	0.023*	0.025**	0.025**	0.025**
		(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Age/10		−0.036***	−0.040***	−0.038***	−0.038***	−0.038***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Contentment with living standard			−0.138***	−0.100***	−0.106***	−0.108***
			(0.021)	(0.022)	(0.022)	(0.022)
Contentment with local public services				−0.121***	−0.128***	−0.153***
				(0.025)	(0.025)	(0.026)
Area security				−0.088***	−0.091***	−0.096***
				(0.024)	(0.024)	(0.024)
Perception of the current country's situation compared to that five years ago					−0.050	−0.046
					(0.049)	(0.049)
Expectations for the country's situation in five years					0.089**	0.063
					(0.042)	(0.043)
Confidence in the country's institutions						0.074***
						(0.024)
Observations	10,958	10,958	10,958	10,958	10,958	10,958
R-squared	0.019	0.038	0.047	0.057	0.058	0.060
Wealth significance test: F	3.94	5.39	0.94	1.34	1.27	0.98
Wealth significance test: *p*-value	0.019	0.005	0.392	0.261	0.281	0.374

Note: The dependent variable equals 1 if the individual is likely to move away from the current place of residence over the next 12 months and 0 otherwise. The indices are constructed across regions from survey variables using polychoric principal component analysis (see Appendix and Online Appendix D for the list of variables, and Online Appendix C for a description of the method). A higher value of an index indicates a better situation. All models control for country fixed effects. Sample weights are applied in the estimation. Robust standard errors in parentheses.

*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

Table A3
OLS regression estimates on the Sub-Saharan sample.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Wealth index	0.081	0.050	0.117	0.173*	0.167*	0.167*
	(0.093)	(0.092)	(0.092)	(0.091)	(0.091)	(0.091)
Wealth index squared	−0.076	−0.076	−0.030	−0.052	−0.044	−0.044
	(0.112)	(0.111)	(0.111)	(0.110)	(0.110)	(0.110)
Male		0.017	0.017	0.013	0.014	0.014
		(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Age/10		−0.051***	−0.052***	−0.048***	−0.047***	−0.047***
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Contentment with living standard			−0.173***	−0.090***	−0.096***	−0.096***
			(0.022)	(0.024)	(0.025)	(0.025)
Contentment with local public services				−0.259***	−0.267***	−0.266***
				(0.030)	(0.030)	(0.032)
Area security				−0.097***	−0.100***	−0.100***
				(0.026)	(0.026)	(0.026)
Perception of the current country's situation compared to that five years ago					0.052	0.051
					(0.080)	(0.079)
Expectations for the country's situation in five years					0.065	0.066
					(0.065)	(0.064)
Confidence in the country's institutions						−0.001
						(0.027)
Observations	16,247	16,247	16,247	16,247	16,247	16,247
R-squared	0.014	0.041	0.056	0.082	0.083	0.083
Wealth significance test: F	0.44	0.27	3.47	7.55	7.54	7.48
Wealth significance test: *p*-value	0.642	0.760	0.031	0.001	0.001	0.001

Note: The dependent variable equals 1 if the individual is likely to move away from the current place of residence over the next 12 months and 0 otherwise. The indices are constructed across regions from survey variables using polychoric principal component analysis (see Appendix and Online Appendix D for the list of variables, and Online Appendix C for a description of the method). A higher value of an index indicates a better situation. All models control for country fixed effects. Sample weights are applied in the estimation. Robust standard errors in parentheses.

*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

Appendix B. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.jdeveco.2014.05.008.

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