Policy Research Working Paper 9662

Rural-Urban Migration in Developing Countries

Lessons from the Literature

Harris Selod
Forhad Shilpi

WORLD BANK GROUP
Development Economics
Development Research Group
May 2021

Policy Research Working Paper 9662

Abstract

This paper reviews the recent literature on rural-urban migration in developing countries, focusing on three key questions: What motivates or forces people to migrate? What costs do migrants face? What are the impacts of migration on migrants and the economy? The literature paints a complex picture whereby rural-urban migration is driven by many factors and the returns to migration as well as the costs are very high. The evidence supports the notion that migration barriers hinder labor market adjustment and are likely to be welfare reducing. The review concludes by identifying gaps in current research and data needs.

This paper is a product of the Development Research Group, Development Economics. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at http://www.worldbank.org/prwp. The authors may be contacted at hselod@worldbank.org and fshilpi@worldbank.org.

Rural-Urban Migration in Developing Countries:

Lessons from the Literature

Harris Selod (The World Bank)
Forhad Shilpi (The World Bank)[1]

JEL codes: J01, J61, O15

Keywords: Internal migration, benefits and costs of migration, barriers to migration, structural transformation, urbanization

[1] Sustainability and Infrastructure Team, Development Research Group, The World Bank, 1818 H Street NW, Washington, DC 20433, USA.
E-mail addresses: hselod@worldbank.org (H. Selod) and fshilpi@worldbank.org (F. Shilpi).

INTRODUCTION

Rural-urban migration has been a key focus of economic historians and development economists for a long time. During the industrial revolution in Europe and North America, internal migration triggered two fundamental and complementary processes: the structural transformation of employment from agriculture to non-agricultural industries and services, and the subsequent economic growth associated with urbanization (Kim and Margo, 2004; Kim, 2007). Not surprisingly, development economists in the 1950s and 1960s also placed unimpeded migration from rural to urban areas at the center of their understanding of the economic development process that had begun to unfold in low income countries. In the seminal papers of Lewis (1954) and Ranis and Fei (1961), rural-to-urban migration is presented as an equilibrating flow of perfectly elastic supply of workers from a rural sector that has surplus labor towards a modern industrial sector located in cites, a transition leading to capital accumulation in cities and economic growth.

In stark contrast with these views, the seminal contributions of Todaro (1969) and Harris and Todaro (1970) presented migration in a quite different light. The main motivation underpinning the Todarian models came from the necessity to account for the existence of unemployment in the cities of developing countries. It is drawn from the real-life puzzle that the level of urban unemployment in Nairobi ended up increasing rather than decreasing after the government, the private sector, and unions joined forces in the 1960s to try and create jobs at the prevailing wage rate (an unexpected result due to induced internal migration to the city that later became known as the Todaro paradox). Where the Lewis models and Harris-Todaro models agree is that migrants respond often vigorously to economic incentives (in the form of higher income prospects in urban areas). The Harris-Todaro model also points to the peril of ignoring migration responses to government policies. Doing so in the context of place-based policies such as the employment creation program in Nairobi could just produce more unemployment due to migration response. Another important lesson from the works of Harris and Todaro is that migration might play quite a different role in developing countries than in developed countries where rigidities and imperfections are more common. The wage rigidity is indeed at the core of the Todaro paradox whereby, because of the wage rigidity, an exogenous increase in labor demand can cause an even greater increase in labor supply from migration to the city at the prevailing wage.[2] As the economic

[2] See Lall, Selod and Shalizi (2006) for a derivation of the result.

literature on internal migration will show, rigidities and imperfections that are also common in other factor markets in developing countries (credit, insurance, land) could also play a role.

Keeping true to the spirit of the Harris-Todaro model on its 50th anniversary, this paper focuses on rural-urban migration in developing countries. It does not attempt a critical review of the Harris-Todaro model, which was already provided in a previous literature survey by Lall, Selod and Shalizi (2009). Instead, it takes stock of the main lessons learned, especially from recent academic contributions. Lucas (2016) reviewed empirical evidence on internal migration with a focus on migration barriers and structural transformation. Lagakos (2020) provides a partial review of the migration literature in the broader context of analyzing urban-rural income gaps in developing countries. This review is organized around three main questions: (i) What motivates or forces people to migrate, making a distinction between voluntary and involuntary migration? (ii) What are the costs faced by migrants, with a particular focus on costs that result from market failures, policy and institutional barriers? (iii) What are the impacts of migration on migrants, their families, labor markets, productivity and economic development?

Focusing on these three broad questions allows us to capture recent changes in internal migration processes as well as emerging evidence on migration barriers and on migration impacts. Much of the economics literature in the past focused on voluntary migrations responding to labor market conditions. There is now increasing realization among economists that rural-to-urban migration choices are not solely driven by differences in labor market outcomes between destination and origin areas and that other factors, such as amenity differences, are also important. Involuntary migration due to climate change, wars and conflicts is also becoming increasingly more frequent in developing countries. A surge of involuntary migration is expected in the Africa region due to droughts, and across Asia due to sea level rise (Hauer et al., 2020). Conflicts around the world produced a sizeable number of internally displaced population with 50.8 million internally displaced persons at the end of 2019, 45.7 million due to conflict and 5.1 million due to disasters, the highest figures ever recorded (Internal Displacement Monitoring Centre and Norwegian Refugee Council, 2020). How these involuntary migrations are affecting the urbanization and structural transformation processes is thus a serious policy concern and has motivated a number of recent studies on rural-urban migration.

The outline of the paper is as follows: Section 1 of this paper discusses the measurement, concepts and trends of internal migration (including rural-urban migration), followed by Section 2 which reviews recent evidence on the drivers of migration. Moving away from the assumption of costless migration retained in the very early literature, migration researchers now recognize that market failures (e.g. incomplete credit and insurance markets), policy and institutional barriers are likely to be major sources of migration costs in developing countries. Recent evidence on the implications of these failures and barriers along with more traditional costs of migration is reviewed in Section 3. In view of the recent literature on the causes and costs on rural-urban migration, Section 4 reviews the impacts on well-being of migrants' families, productivity and employment transition, and labor market adjustments. A concluding section discusses research gaps and policy lessons.

SECTION 1 –PATTERNS AND TRENDS OF INTERNAL MIGRATION

Although international migration is front and center in policy debates, the number of international migrants (272 million people or 2.8 percent of the global population in 2019 according to the International Office for Migration) is dwarfed by the number of internal migrants, which could be at least 3 or 4 times larger. To the best of our knowledge, the most recent figure published in the literature on internal migration at the global scale dates back to 2005, with 763 million internal migrants or 11.7 percent of the world's population at the time (Bell and Charles-Edwards 2013). The figure is based on a measure of lifetime migration (defined by current residence in an area that differs from the area of birth). This figure is only an estimate given that the authors had to reconstruct missing data for a large number of countries.[3] It is reasonable to assume, however, that it probably underestimates the true extent of internal migration given that the calculation uses areas of residence defined at large administrative subdivision levels.[4] With the steady increase in global population and intensification of some drivers of internal migration such as climate change

[3] Bell and Charles-Edward (2013) explain that their global estimate was obtained by calculating a population-weighted average of migration intensities (the propensity of population to move across sub-divisions) across four broad regions using the migration intensities from 66 countries for which data were available.

[4] To ensure comparability across countries, the authors used first-level administrative sub-divisions. Because people are generally more mobile across shorter distances, the figure is thus likely underestimated compared to a measure of internal migration at a finer geographic level.

and conflict (see Section 3), one could reasonably deem the number of internal migrants to exceed 1 billion people.

The lack of a recent estimate for internal migration at the global scale reflects the relative scarcity of measures of internal migration at national levels, especially in developing countries. This is understandable in light of conceptual issues and data gaps, which we discuss sequentially below:

First, internal migration patterns are heterogenous, with migration simultaneously occurring from rural to urban areas but also between rural areas and from urban to rural areas. Which patterns are observed in a given country seems to reflect the country's development stage as initially theorized in human geography by Zelinski (1971). In large developing countries undergoing urbanization, especially in South Asia and Sub-Saharan Africa—where the rural population is still disproportionately large—there are significant internal migration flows from rural to urban areas (Brueckner and Lall, 2015). Although internal migration between rural areas is much less documented given the lack of data and lack of attention paid to the phenomenon (until recently), rural-rural flows are likely to also be very large and could even exceed urban-rural flows as a few studies seem to indicate (Lucas, 1997). On the contrary, in the relatively more urbanized countries of Latin America and East Asia, it is urban-to-urban migration which predominates (Lucas, 2016). As for urban-to-rural migration, it is much less studied in the literature but could also represent sizeable flows, especially in countries at earlier phases of economic development as in Sub-Saharan Africa (Cattaneo and Robinson, 2020). Urban-rural migration is also an emerging phenomenon in developed countries where it could be occurring as part of a broader movement of relocation away from densely populated areas and in response to a renewed attraction by the rural lifestyle—a phenomenon that could be further accelerated by the COVID-19 pandemic.

Second, the measure of internal migration is further complicated by the duration of migration spells, which may be temporary (including but not restricted to seasonal migration) or permanent. In this respect, internal migration is more likely to be permanent when reflecting a trend towards urbanization in the country, and seasonal in contexts where internal migrants keep an activity in the rural area during the agricultural season. It is worth to note that temporary migration often takes the shape of return migration, a phenomenon that remains insufficiently studied but which is increasingly attracting the attention of demographers and economists: Using Demographic and Household Surveys for 31 developing countries in different regions, Cattaneo and Robinson (2020)

find that a significant fraction of internal migration from rural areas to cities results in return migration to a rural area. They find that it is highest in Sub-Saharan African countries where between 7 and 51 percent of male and between 3 and 32 percent of female rural-to-urban migrants end up returning to a rural area at some stage of their life cycle.

Third, data constraints also significantly affect measures of internal migration. As already mentioned, the geographic level at which data is collected (and its classification in urban and rural areas) but also the temporal horizon over which migration flows are measured have significant impacts on internal migration estimates (Bell et al., 2018). Because of this, lack of harmonized data makes comparison of migration flows across countries a rather difficult exercise. Internal migration estimates can indeed be obtained from heterogenous sources: They can be calculated from population censuses in cases where households are asked their previous place of residence (usually at the municipality or region level) at a specified date (often one or five years before) or at birth. Alternatively, household surveys may ask the same questions or collect more precise information on past migration history. Administrative data may also be used to estimate migration stocks and flows. Interestingly, cell phone data (Call Detail Records) offer new avenues to measure migration at different spatial and temporal scale as demonstrated by Blumenstock, Chi and Tan (2019) for Rwanda and Lai et al. (2019) for Namibia. For more detailed discussion of data and measurement issues, we refer readers to Kirchberger (2020).

Unfortunately, the available data usually does not make it possible to clearly disentangle rural-urban migration from overall internal migration flows. Cross-country comparisons are thus usually made for internal migration as broadly defined. Bell et al. (2015) for instance provide estimates of permanent internal migration intensities around the 2000-2010 decade for a large number of countries but without distinguishing whether origin or destination areas are rural or urban.[5] They find on average higher migration intensities in developed countries (North America, Western Europe and Oceania) than in developing countries. In the developing world, according to their data, Asia has the lowest migration intensity and Latin America and Africa stand at intermediate levels. Migration intensities are however very heterogeneous within regions, with high migration intensities in Northern Africa (Morocco) and parts of West and East Africa

[5] The authors, however, warn that permanent migration only represents one type of flow that may be compensated by other types of temporary migration.

(Senegal, Cameroon, Guinea, Tanzania, Kenya) and Southern Africa (South Africa and Zambia) but low migration intensities elsewhere on the continent. As for Latin America, it shows higher migration intensity in the Andean countries than in other countries of the region, and in Asia, the Republic of Korea is the most mobile country whereas India is the least mobile of all Asian countries.[6]

A longitudinal look at the existing data over the past decades shows that the intensity of internal migration has not followed a single trend but has varied significantly within and across regions: Studying internal migration flows up to 2010 in the sample of countries for which data were available, Bell et al. (2018) find that internal migration mostly tended to decline in the 21 Latin American countries they studied (with the exception of Brazil and Chile); that it either stagnated or declined in the 8 Sub-Saharan African countries in their sample (with the exception of Mali which experienced a very strong increase); and that there was a mix of both declining and rising intensity of internal migration in the 9 Asian countries for which they had data, with the notable cases of China, Indonesia and Vietnam, which faced a very significant increase in their internal migration intensity (some of it likely due to the presence and effectiveness of migration policies as discussed in Bell et al. (2020)).[7] These evolutions do not show a clear link on average to the level of development, and no clear regional pattern seems to emerge with the exception of the decrease in migration intensity in Latin America and an increase in Europe (Bell et al., 2015, and Bell et al., 2018). To our knowledge, unfortunately, no comparative study has been published using data from the most recent decade so that global and regional internal migration trends over recent years remain insufficiently documented.

In the rest of the paper, we will mostly focus on rural-urban migration, which is a core feature of economic development and has attracted the most attention in the economic literature.

[6] Bell et al. (2015) report aggregate crude migration intensities at 5 years (ratio of the number of internal migrants during the transition period to the population at risk of moving) that are for instance in the range 5 percent in India and the Arab Republic of Egypt, 10 percent in Nicaragua, the Islamic Republic of Iran and Thailand, 20 percent in Morocco, 30 percent in Cameroon, 40 percent in the United States and 50 percent in Korea.

[7] The assessment is based on internal migration intensity during 1 and 5-year periods using population censuses until 2010. In developed countries, there are also heterogenous trends: In North America and Oceania, migration intensity unequivocally declined, whereas migration intensity stagnated or decreased in some European countries but increased in other European countries.

SECTION 2 –THE DRIVERS OF RURAL-URBAN MIGRATION

In this section, we present the main insights as well as recent developments from an abundant literature that focuses on the causes of migration, starting with the decision to migrate. We focus to the extent possible on rural-urban migration but also comment, when useful, on papers that more broadly address internal migration. With the exception of forced migration, economists view the individual or family decision to migrate as a rational choice that weighs expected benefits against costs. In this setting, rural-urban migration is a response to factors that affect the desirability of urban life over rural life (such as improved income, education quality or health services available in the city, or negative income shocks in the rural areas). How much these gains from migration to cities are valued by migrants may in turn depend on a series of other factors (including information potential migrants may have about the returns to migration and their expectations about those returns, the opportunities that migration provides them to diversify risk with an urban income, their aversion towards risk, or the relative social status they may derive from migrating and sending remittances). The gains from migrating to cities need to be weighed against the costs faced by migrants (which are presented in Section 3). For clarity of exposition, we present the drivers of migration sequentially and in isolation from one another. The decision to migrate, however, is multifaceted and ultimately accounts for a combination of all these factors.

2.1. Higher urban incomes

In the wake of the Harris-Todaro model, economists have considered that internal migration is mainly a response to differential labor market opportunities across space, with higher incomes in urban areas acting as a pull factor for rural dwellers.[8] Numerous empirical papers have thus focused on estimating the role of labor market differentials between urban and rural areas, especially in terms of labor income, as the driving force leading to internal migration. This approach raises a series of econometric challenges, with one of the main empirical issues being to be able to correctly estimate counterfactual incomes for migrants (i.e., the income of migrants had they stayed) and for non-migrants (i.e., the income of non-migrants had they moved) by correcting for migrant selectivity. Failure to do so would bias estimates of the migration's response to income

[8] The focus on labor markets as the main drivers of internal migration is prominent in the migration literature (see Stark's 1991 compilation of migration research papers entitled *The Migration of Labor*).

differences between urban and rural areas.[9] Another issue is to be able to account for multiple destination areas. Whereas earlier studies modeled migration decisions with multinomial logits that needed to assume independence of irrelevant alternatives—a rather unrealistic assumption—non-parametric approaches have made it possible to circumvent this issue while also allowing to estimate individual migration decisions in the presence of numerous potential destinations (see Dahl, 2002).[10] Another problem is the appropriate measure of income to be considered when empirically modeling migration as a response to income differentials. One would ideally want to use discounted expected streams of real income (not unadjusted nominal wages) or at least to be able to account in some way for variations in costs of living across geographic areas. Beyond gross income, monetary transfers and remittances should also be accounted for, but the data are often lacking. Finally, an issues of model misspecification can arise if other relevant factors that affect migrant utility are omitted and not controlled for, something which is quite likely to occur given the multiplicity of factors affecting migration decisions.

Spanning over several decades, economists have gradually improved the treatment of these issues and have produced robust evidence on the role of income or wage differentials as drivers of internal migration (see the examples cited in Lall, Selod and Shalizi, 2006). A number of recently published studies presents migration as equilibrating force and estimates how internal migration flows responds to local labor market differences. Imbert and Papp (2019) for instance show that a large workfare program which hired rural adults during the agricultural off-season in India—a scheme likely to reduce the income gap between rural and urban areas—had a significant impact on deterring seasonal migration to cities. Two other papers—although not explicitly focusing on rural urban migration—provide additional insights: Studying France over the long-period, Détang-Dessendre, Partridge and Piguet (2016) investigate how internal migration across the country's roughly 300 employment zones responded to local employment growth (alongside with other responses in terms of local labor force participation, local employment rate and commuting

[9] See Lanzona (1996) and McKenzie, Stillman and Gibson (2010) for examples of corrections for migrant selectivity in this context.

[10] Dahl's (2002) approach is applied to internal migration in the United States and relies on the estimation of a wage equation for a subsample of migrants, correcting for selection, but without having to specify the location choice process. The probability of migrating between locations is estimated non-parametrically using the frequency estimator for individuals that share the same observed characteristics (education and age), assuming that they are affected in the same way by the determinants of migration.

patterns across employment zones).[11] The authors find 70%-85% of the adjustment to changes in local employment conditions occur through external responses in migration and commuting. Similarly, Cadena and Kovak (2016) find that local labor demand shocks during the Great Recession in the United States have led to internal migration responses. Interestingly, they find a greater migration response from Mexican-born low-skill workers than from natives, a pattern which they attribute to the greater labor-force attachment of Mexican-born workers and their large social networks that could have helped them more easily acquire information on where to relocate.

Observe that not all papers in the literature, however, find that migration occurs towards areas that exhibit better labor market outcomes. In fact, the positive association between income differentials and migration is not required to hold in all circumstances. It may not hold for instance if realized incomes turn out to be lower than expected incomes, or in the presence of imperfect information (if migrants miscalculate the returns on migration in their chosen location), or given trade-offs over time (if migrants accept low incomes upon arrival in the city but expect greater incomes in the future as they become assimilated or as they accumulate city-specific specific human capital and become more productive over time— see evidence on Spain presented by De la Roca, 2017, and De la Roca and Puga, 2017).

2.2. Better urban amenities

Besides income opportunities, access to urban amenities can also be a key factor motivating rural-urban migration. As matter of fact, because of compensating differentials linking wages to amenities and costs of living (as in the models of Roback (1982) and Diamond (2016) [12]), studies of the migration decisions should not only consider the role of wages but also simultaneously account for amenities and costs of living.[13] To our knowledge, however, only a few empirical studies assess the role of amenities as drivers of internal migration. One example is Shilpi, Sangraula and Li (2014) who confirm that internal migrants in Nepal attach a value to infrastructure and services, namely access to electricity and proximity to paved roads. It is

[11] To address the endogeneity of local employment growth, the authors instrument it with Bartik (1991) instruments, where the instruments are constructed assuming that national employment conditions carry over to local areas based on their past industrial mix.

[12] Insights from these models and the economic geography literature show that, in general, cities that attract and remunerate skills also tend to offer more amenities and command high rents.

[13] From an econometric standpoint, not controlling for amenities or the cost-of-living in a migration decision regression would introduce a correlation between the error term and wages, biasing the estimation.

important to note here that urban amenities that might attract migrants extend beyond infrastructure to also include social and educational opportunities in cities. In this respect, Fu and Gabriel (2012) who study internal migration flows across Chinese provinces in the 1990s find that high-skill migrants valued the human capital concentration of destination areas but that low-skill migrants did not. Such heterogenous preferences can possibly be explained by the higher barriers faced by low-skill migrants for their own capital investment. Low-skill migrants may also have benefited from only limited potential to interact with high-skill workers in destination areas before China started to ease migration restrictions.

2.3. Income shocks in rural areas (from climate change and conflicts)

Because of an intensification in climate change and the rise in conflicts, notably in the Middle East and Sub-Saharan Africa, there is renewed interest to study the impact of climatic shocks and violent conflicts on rural-urban migration. Interestingly, although the literature confirms that both can act as push factors, the mechanisms at work and the nature of migration flows can be quite different.

Climatic shocks

A series of papers analyzes how climatic shocks can negatively affect crops and reduce agricultural incomes in rural areas, leading to outmigration to cities. Using country-level panel data for 78 countries over 3 decades (between 1960 and 1990), Barrios, Bertinelli and Strobl (2006) show that decline in rainfall accelerated urbanization in Sub-Saharan Africa, but do not find evidence of a similar effect elsewhere in the developing world. In the wake of the Barrios et al. (2006) paper, other papers have investigated the conditions under which climatic shocks cause migration to cities, finding nuanced results. Peri and Sasahara (2019) find that rising temperatures do not in fact accelerate rural-urban migration in poor countries but rather reduce it, although they increase rural-urban migration in middle-income countries, a differentiated result that is consistent with liquidity constraints preventing outmigration from rural areas in poor countries (see Section 3 of this survey). Similarly, Grace et al. (2018) who look at climatic shocks at an even finer scale (i.e., focusing on individual outmigration strategies in two rural communities in Mali), find that decreases in rainfall led to outmigration, which they believe is due to a reduction in the resources available to fund migration and also to the lack of destination areas with better economic

prospects.[14] The context under which climatic shocks are related to the economic environment is studied Henderson, Storeygard and Deichmann (2017) who focus on the impact of climate variability (as measured by decline in moisture) at a fine geographic scale (districts and cities) in 29 Sub-Saharan African countries over 5 decades (1960-2009). The authors find strong evidence that adverse changes in climate pushes people out of rural areas into neighboring urban areas but only in districts that have a manufacturing base that allows for an "escape" into export-based employment. Other authors have tried to compare the strength of climatic determinants to that of other drivers in explaining internal migration. In the specific case of the Republic of Yemen, Joseph and Wodon (2013) find that although climatic variables (temperature, rainfall and their variability) do indeed play a role in explaining internal migration, the magnitude of the effect on internal migration is much smaller compared to that of socio-economic variables. The external validity of their findings however would need to be checked with similar studies in other contexts.

Another line of papers investigates the nature of internal migration caused by climatic shocks. Some papers argue that outmigration could play an important role in reconstruction processes. For instance, Gröger and Zylberberg (2016) find that a typhoon in Vietnam led to rural outmigration of household members sending remittances to affected areas. Other papers ask whether there is heterogeneity in the response to climatic shocks. In the case of Tanzania, Kubik and Maurel (2016) find that outmigration from rural areas following weather shocks is conditional on the initial endowment and that selectively occurs in the middle of the wealth distribution (as poorer households cannot afford migration costs and richer households do not need to respond to shocks through spatial diversification). Other papers investigate whether climatic shocks lead to temporary or permanent relocation. This strand of literature seems to indicate that punctual shocks could lead to temporary migration whereas long-term climatic trends (like soil salinization or desertification) could lead to more permanent migration. In the case of China, Minale (2018) finds that a one standard deviation in rainfall leads to a 5 percent increase in migration to cities, reflecting both new departures but also longer spells spent in cities. In the future, it is likely that dramatic climatic changes could accelerate permanent migration and reduce temporary migration.

[14] The authors also stress that economic stress could disrupt circular migration observed in these villages.

Violent conflicts

As with climate change, there is renewed interest and evidence regarding the role of violent conflicts leading to both international and internal migration (internally displaced people in Latin America, Sub-Saharan Africa and the Middle East). Violence can potentially accelerate rural-urban migration in contexts where cities are safer than rural areas. The actual empirical evidence is however subject to debates as the link is not as straightforward to establish as it seems, and because current findings are somewhat nuanced and point to different mechanisms than in the case of climatic shocks. In the case of the Guatemalan civil war (which lasted from 1960 to 1996), Morrison (1993) finds that although political violence against guerrillas in rural areas (assassinations) led to migration to cities, the response to economic variables was significantly larger than the response to violence variables.[15] Studying the migration response to violence in Colombia, Engel and Ibáñez (2007) find that violence accelerated urbanization. They also find suggestive evidence that the role played by risk aversion, information and wealth might be different in contexts of violence than in the standard theory: Risk aversion might increase rather than decrease the propensity to migrate (when individuals with low risk aversion are more eager to stay home and face the risk of violence). Poor information can also facilitate rather than deter migration (as potential refugees may not have accurate information on the precarious conditions displacement would expose them to). Finally, wealth at the place of origin might provide an incentive rather than a disincentive to migrate (as wealthier households will be at an increased risk of violence in the origin area). Basu and Pearlman (2017) study the impact of homicides related to the drug war in Mexico on internal migration and find little evidence that violence at the state and municipal levels—which they instrument with highways interacted with shocks to the cocaine supply from Colombia—led to any increased domestic migration. They argue that violence may instead result in changes in consumption and investment decisions and weaker tenure of assets in origin areas. It might also well be that migration reactions to violence could depend on the level of violence as migrating can be very costly when violence is very intense.[16]

[15] Of course, economic variables themselves could be influenced by violence, which somewhat weakens the identification.

[16] Rather than be caused by conflict, migration itself could also result in conflict. In Uganda, for instance, internal migration (to rural areas) has been found to be a source of land conflict, which in turns reduces agricultural productivity (Mwesigye and Matsumoto, 2016).

2.4. Insurance against risks

Studies have highlighted the role of absent or incomplete insurance and credit markets (i.e., capital market imperfections) and the lack of income diversification opportunities in rural areas as causes of rural-urban migration (Stark and Levahri, 1982). In this context, migration plays the role of a "self-insuring" mechanism that allows for diversification of incomes in the face of uncertainty (as migrants can generate income for themselves or others left in the rural areas to whom they send remittances). Interestingly, the decision to migrate is not necessarily taken by isolated individuals but might often involve family arrangements for co-insurance between individuals who face risks at different times (Stark and Lucas, 1988). The absence of a credit market in rural areas might also encourage migration by preventing farmers to smooth their expenses and investments when incomes are volatile (in particular due to climatic risks and volatility of agricultural prices). Paradoxically, poor access to credit can also provide incentives to migrate out of rural areas that have high production potential in order to gather the necessary funds to finance profitable investments in these areas (Katz and Stark, 1986).

Recent studies confirm the above mechanisms with some interesting qualifications. Poelhekke (2011) studies 163 countries between 1970 and 2000 and finds that periods of aggregate agricultural risk turn out to be robust additional predictors of urban growth. In China, grain subsidies—which provide insurance against price volatility—are found to reduce outmigration of rural areas to cities (Meng, 2012). In Tanzania, Kubik and Maurel (2016) find that a reduction in income from weather shocks (measured by evapotranspiration, temperature and precipitation) stimulates outmigration within the following year for households whose income is dependent on agriculture but not for those who have a diversified income. Similarly, Morten (2019), who develops a structural model to study the substitutability of temporary migration in India and village-level risk-sharing mechanisms, finds that if risk-sharing is improved, temporary migration is reduced (and vice-versa). The author also finds that the impact of India's large rural employment scheme would be to substitute both for informal insurance and temporary migration by raising rural incomes. Munshi and Rosenzweig (2016) who study internal migration choices in the context of informal insurance networks provided by castes in rural areas present a somewhat different picture. The authors find that migration choices can in fact be deterred by a household's loss of informal insurance if household members migrate. Because households with migrants become less credible in their commitment to honor future obligations and might have incentives to

underreport their urban income to other caste members, households who face greater rural income risk are also less likely to have a migrant member. In this context the provision of formal insurance will increase rather than decrease migration.

SECTION 3 – THE COSTS OF MIGRATION

When making a migration decision, potential migrants weigh the utility gains against the costs associated with their decision. Migrants may face significant costs both at the origin and destination besides the actual travel cost to the destination area, including the transportation and subsistence costs during job and residence search, the psychological distress of leaving family members behind and maintaining relationships from far away, the difficulties of assimilation in destination areas with cultural, ethnic, religious and linguistic backgrounds that differ from their own, and opportunity costs of foregone activities in the rural area of origin. Institutions (e.g., social norms and traditions) or policies may further erect barriers which affect migrants' returns to migration or facilitate or restrict migration. This section reviews the literature on various migration costs, distinguishing between migration-related costs, policy barriers and institutional barriers.

3.1. Migration related costs

Physical distance and monetary migration costs

Invariably, all empirical studies of the migration decision control for migration costs, either by using distances between origin and destination as explanatory variables or by introducing origin-destination fixed effects, which can capture a wider range of bilateral migration costs beyond the ones correlated with distance. The overwhelming evidence is that distance matters significantly in the migration decision as migrants usually tend not to relocate far from their area of origin. The distance coefficients are found, however, to differ by groups, with a negative association that is much sharper for the relatively unskilled and poorer workers (see evidence of this in Shilpi et al. (2018) on South Africa, Lall, Timmins and Yu (2009) on Brazil, and Shrestha (2020) on Nepal). In most specifications, the distance coefficient is treated as a catch-all term for migration costs that vary with distance, such as for instance information about destination areas. It should be noted that similarly to the distance coefficient in a gravity equation of trade flows which not only captures trade costs but also differences in comparative advantage, the distance coefficient in a migration

flow analysis reflects various costs associated with migration as well as the differences in migrants' relative selectivity over distance (Bryan and Morten, 2019). A structural analysis is thus useful to try and separate out the cost component from that of the selectivity component.

Although the previous literature has focused on migration costs hindering migration, a new set of studies, which often resort to structural estimation, puts emphasis on the economic impact of attenuating these costs. In fact, there is suggestive evidence that transport costs represent only a small fraction of total migration costs. For instance, when assessing the impact of road improvements in Brazil, Morten and Oliveira (2016) find that welfare is on average only marginally improved through increased migration but that the bulk of the welfare gain from road improvement (95 percent) comes instead from the stimulation of trade. The welfare improvement that can be attributed to increased migration is nevertheless spatially heterogenous, with some regions benefiting much more than others. Guriev and Vakulenko (2015) find that increased incomes in the Russian Federation's poorer region increases outmigration, a result consistent with the idea of a poverty trap whereby potential migrants are stuck in low productivity areas and not able to afford the costs of migration.

Socio-cultural distance

As with the physical and financial costs of migration, migrants face additional costs due to differences in language, ethnicity and religion.[17] Fafchamps and Shilpi (2013) find that social proximity has a strong significant effect on migrants' choices of destination in Nepal: Migrants move primarily to areas where many people share their language and ethnic background. Bauernschuster et al. (2014) report a similar importance of cultural differences in determining the migration decision of skilled workers in Germany. Social-cultural distance also affects success at the place of destination: For instance, Bazzi et al. (2019) report that migrants living in communities with diverse ethnic backgrounds integrate better than those in communities dominated by few ethnic groups.

Social networks

The social networks of migrants can play a critical role in determining both migration flows across areas and migrant outcomes in destination areas (see Section 4) by reducing costs associated with migration. Importantly, social networks may not only act as a conduit of information about jobs

[17] These differences also tend to grow with migration distance.

and housing availability at destination but can also provide a safety net through social support. On this, we refer the reader to Munshi (2020) who surveys the vast literature on the relationship between community networks and migration and only report here new insights from select recent work. An innovative approach to study the role of migrant networks in migration decisions is presented in Blumenstock, Chi and Tan (2019) who use a rich 'digital trace' data set in Rwanda that allows to draw conclusions on the type of network that matters in driving migration decisions by observing the relocation choices made by millions of individuals over several years, as well as the complete social network of each person in the months before and after migration. The authors make a distinction between 'interconnected' and 'expansive network'. The network is interconnected when neighboring agents interact with each other repeatedly, resulting in clustering of common friends in the locality who provide social support. The expansive network is one where a migrant is connected to agents who may act as a conduit of information ('information capital') but where agents are not interconnected with each other. While the authors confirm the findings in previous literature that people tend to migrate to places with larger social networks, they are able to estimate the effects of interconnected *vs* expansive network on migration. The authors find that migrants are more likely to go to places where they have 'interconnected' networks but less likely to go to places where their networks are expansive.

Another strand of recent literature confirms how social support and mutual insurance within networks may either stimulate or curb migration. Kinnan, Wang and Wang (2018) show that a mandatory program of temporary migration from urban to rural areas in the 1960s and 1970s in China created lasting linkages between sending and receiving areas, subsequently explaining migration flows from rural to urban areas. Focusing on India, Munshi and Rosenzweig (2016) show that whereas having a strong social network at the destination area encourages migration and creates path dependence in migration patterns, an informal mutual insurance network at the origin area plays in the opposite direction and deters migration, especially for the poor who depend on such networks disproportionately. Similarly, Meghir et al. (2019) find evidence of risk sharing in rural Bangladesh at the village level as a randomized intervention subsidizing migration of poorer households ends up increasing risk sharing within the village (a result the authors interpret as crowding-in of risk sharing that is relaxed with the subsidy).

Information and migration

There is an interesting focus in the recent literature on the way migrant networks transmit information. A number of studies specifically focus on the cost of accessing information about jobs and housing: In a randomized control experiment in Niger, Aker, Clemens and Ksoll (2011) find that individuals in a treatment group of cell-phone recipients who were able to keep in contact with their friends in towns increased their seasonal migration to towns significantly compared with a control group with no cell phone. Baseler (2021) runs an information experiment where residents of randomly selected Kenyan villages received information about wages and prices of food in Nairobi and other urban centers and about the most common jobs for migrants in each potential destination. In a second experiment, the author provided full information about income and savings of families of migrants to other randomly selected villagers. Both of these interventions raised expectations about average urban wages and increased migration to Nairobi by 40 percent. Two years later, migration rates were still higher among those getting the information treatment, and migrants reported higher subjective well-being on average. The results from this study show, however, that even though villages may have many migrants in cities, the information about income and job prospects is not widely shared within the village. We should also note here that these findings are context specific. For instance, Bryan, Chowdhury and Mobarak (2014) – a study we discuss in more detail later – did not find any impact of information provision in their randomized control study in Bangladesh.

The cost of acquiring information could also be substantial. Porcher (2020) uses a structural model applied to Brazil to show that the costs to acquire information account for about half of overall migration costs. Other studies focus on the effects of access to information and how it can dispel unrealistic expectation of migrants about job availability, income and life in destination, and help migrants better target their destination areas. There is evidence of this in the study by Farré and Fasani (2013) who find that, in Indonesia, media exposure through television reduces inter-regional migration significantly (1.7-2.7 percent). Porcher (2020) finds that by allowing workers to make better mobility choices, expansion of internet access in Brazil reduces migration flows by a magnitude similar to TV exposure in Indonesia.

Credit constraints

Whether potential migrants are able to fund migration depends on their access to credit.[18] Job search can be prolonged requiring migrants to be able to survive at the destination area during periods of job search. As the poor may not have financial savings to support extended job search, this should adversely affect their migration propensity. Credit constraints should thus further hinder the migration of the poor relative to the rich who are less subject to credit constraints and should more easily be able to fund their migration. In line with these mechanisms, several papers provide robust causal evidence of the presence of credit constraints and document how credit constraints differentially affect the rich and the poor. Ardington, Case, and Hosegood (2009) find that, in South Africa, the arrival of pensions for the elderly in the household increases migration of prime-aged adults to cities as households are able to support these migrants until they become self-sufficient. Using a regression discontinuity design, Eggleston, Sun and Zhan (2018) confirm similar effects of pensions on out-migration from rural China. Cai (2020) randomizes the rollout of a microfinance program in rural Chinese villages and shows that households receiving micro-finance loans are much more likely to send migrants seasonally to nearby cities. Poggi (2019) studies the impact of Village Fund scheme in Thailand and finds that it reduced outmigration, although only in the medium term. This finding suggests that migrants were perhaps not credit constrained in the context of Thailand. It is also possible that Village Fund may have opened up profitable employment opportunities within the villages outweighing the effect of relaxation of credit constraint on migration. The lesson from the above studies is that to detect credit constraints, it is better to rely on targeted credit intervention such as in Cai (2020) than a broad intervention such as Thai Village Fund which may have involved other mechanisms than the ease of constraints on funding migration.

3.2. Policy barriers to migration

The previous sub-sections reviewed studies that highlighted various migration costs that an individual migrant may face. Public policies can play a role in relaxing some of the constraints discussed earlier. The examples of a potential public role include transport investment to reduce physical distance, cash transfer programs to relax credit constraint, and connecting migrants to diaspora to overcome information asymmetry. There are, however, many instances where

[18] Access to credit also affects the ability of rural dwellers to smooth their incomes in case of a shock, another channel which can affect migration (by reducing the incentives for migration in that case).

governments in developing countries create barriers to migration intentionally or unintentionally. This section reviews the recent literature on the ways government policies or practices may discourage or restrict migration, which is much more common than programs aiming at facilitating internal mobility.

Migration restrictions

In developing countries, migrants face significant regulatory and institutional barriers. Among the legal barriers, perhaps the most well-known is the Hukou household registration system, which has long been used by the Chinese government to regulate unskilled migration to its cities. In China, every household in China has a Hukou registration booklet which provides them one of two statuses: agricultural/rural or non-agricultural/urban. Since 1949, migration from rural areas to cities was strictly prohibited, and only weakly tolerated after 1983. Since 2002, although the Hukou system is still in place, the national government has been trying to facilitate migration, but implementation remains very poor, with larger municipalities still imposing significant hurdles to prevent holders of agricultural Hukou from enjoying social welfare benefits (Sun, 2019). The reluctance of cities to completely open up to rural-urban migration can be explained by their fear of having to bear significant costs to provide social services to migrants. This type of household registration system is also found in other developing countries such as Vietnam (Ho Khau) and Ethiopia. In Ethiopia, migrants are required to show proof of residence to access government services and apply for formal jobs which is often difficult to provide when they are staying with friends or families.

The literature shows that migration restrictions impose high economic costs on migrants and the economy as a whole. In China, migrants who want to enroll their children in schools in urban areas face additional fees and associated costs, which often force rural migrant families to leave their children behind, especially if they have a daughter, and instead send remittances to pay for the education of children left behind (Dang, Huang and Selod, 2020).

Apart from direct restrictions such as household registration, governments may also deter migration by investing less in the public services needed by migrants. For instance, during the dictatorship in Brazil, richer and larger urban areas were found to withhold the provision of water and sewerage connections to smaller houses in which poorer migrants would live in order to

discourage the in-migration of poorer migrants and deflect them to other localities (Feler and Henderson, 2011).

Entitlement and subsidy policies

An additional class of barriers to migration are policies which end up reducing migration even if this was not an intended objective. Entitlement programs and other policies targeted to rural residents often have such unintended consequences. Imbert and Papp (2020) who studied the effect of India's rural public works program find that seasonal migration from rural districts that implemented the program decreased relative to those that were selected but did not implement it. Using detailed district-to-district migration data from the 2001 Census of India, Kone et al. (2018) find that average migration between neighboring districts in the same state is at least 50 percent larger than neighboring districts on different sides of a state border. Such large state border effects arise from differences in state-level entitlement schemes, ranging from access to subsidized goods through the public distribution system to the bias for states' own residents in access to tertiary education and public sector employment.

3.3. Institutional barriers to migration

Land tenure and land markets in rural areas

Migrants may face institutional barriers at their origins as well. Most of the restrictions identified in the literature relate to property rights and tenurial arrangements regarding agricultural land.

Land inheritance practices. Cultural and institutional aspects regarding land inheritance in rural areas can significantly influence the process of rural-urban migration. In pre-war Japan, for instance, patriarchy forced the son designated as heir—primarily the first-born—to stay in agriculture, slowing migration to urban areas and structural transformation. In this context, post-war inheritance reforms—leading equal to shares of agricultural land for all children—led to a mass exodus of younger cohorts of labor force out of rural areas, and a sharp change in employment patterns which were accompanied by an increase in growth of per capita income (Hayashi and Prescott, 2008). Using household panel data and exogenous timing of land redistribution in Ethiopia, Kosec et al. (2018) find that larger expected land inheritances significantly lower the likelihood of long-distance permanent migration and of permanent migration to urban areas. Inheriting more land also leads to a significantly higher likelihood of employment in agriculture and a lower likelihood of employment in the non-agricultural sector. Abramitzki, Boustan and

Eriksson (2013) show that 19th century Norwegian men who could expect to inherit wealth from their parents (as measured by the property tax their parents paid), especially elder sons who were more likely to inherit the land, were less likely to migrate internally and internationally.

Property rights and tenure insecurity. The nature and enforceability of property rights in origin areas can affect migration decisions. Having formal property rights on agricultural land could positively affect rural-urban migration as it makes land a more liquid asset and in turn eases financial constraints. Another reason is that formal property rights provide tenure security to owners who may migrate without the risk of losing their asset, and strengthen the option migrants may have to keep a source of income from renting out their plot, or to return to their origin area in case of an unsuccessful migration. When formal mechanisms to secure property rights are not accessible or land transfers are restricted, migrant households may respond either by stopping migration altogether or by deciding to leave household members behind (split migration) in order to maintain their claims over family-controlled plots. On the other hand, tenure insecurity can decrease the expected returns from land investments in the origin area, which encourages outmigration. The literature indicates that most empirical findings point towards the first effect dominating the second, with tenure insecurity curbing outmigration. Using the rollout of the Mexican land certification program from 1993 to 2006, De Janvry et al. (2015) find that households that obtained certificates were subsequently 28 percent more likely to have a migrant member. Chernina, Dower, and Markevich (2014) find that the 1906 Stolypin land titling reform—which facilitated the transition from communal land rights to individual land rights in tsarist Russia—increased the liquidity of land and had a sizeable positive effect on inter-provincial migration in Russia. In the case of Sri Lanka, Emran and Shilpi (2017) show that land sales restrictions led to an increasing feminization of rural labor as women were left to take over agricultural activities while men migrated.

Interestingly, even in contexts where land rights are not contested, the prospect of a future land reallocation—a cyclical practice that can exist in customary land regimes as well as in socialist contexts—can play in a similar fashion as weak property rights, deterring outmigration. In the context of Chinese rural areas, Giles and Mu (2018) show that the expectation of land reallocation following a village leader election reduces the probability of households to migrate.

The effect of land tenure insecurity on migration decisions may also play in conjunction with other potentially constraining factors, in particular if there exists an active land market or if, on the contrary, land transactions are impeded. The idea here is that sales markets make it possible to cash in on the value of land and fund migration, and that rental markets make it possible to maintain an income stream after migration. In line with these ideas, Mullan et al. (2011) find that greater tenure security increases rural outmigration in China when combined with the existence of complete rental markets but reduces it when rental markets are restricted. The existence or completeness of land markets may also have direct effects on migration irrespective of tenure security issues. However, there is evidence to the contrary as well. Kosec et al. (2018) find that the existence of rural land markets can curb migration as they argue that migration happens due to household's lack of access to land, which is relieved in the present of a land market. Finally, Hu, Xu and Chen (2011) find that the absence of land markets in Chinese rural areas favors circular migration at the expense of permanent migration.

SECTION 4 –MIGRANT OUTCOMES AND MIGRATION IMPACTS

An important focus of the rural-urban literature has been to assess the impact on the well-being of migrants themselves, on the well-being of their families, and on areas of origin and destination, and on the economy as a whole.

4.1. Returns to migration

A key motivator behind migration is expected income and welfare gains. How large are these gains? The available evidence suggests that there are large income gains from migration, particularly for the families left behind at the origin. In a study of rural Indian individuals that were surveyed in 1975 and again in 2005, Dercon, Krishnan, and Krutikova (2013) find that consumption per capita was 42 percent higher for those that migrated since the first survey than for those that stayed put. Using a thirteen-year panel survey from northern Tanzania, Beegle, De Weerdt, and Dercon (2014) report similar findings. Among the 912 households surveyed and tracked, the authors find, after controlling for education, age, and other co-variates, that those moving out of the community had 36 percent higher consumption levels than those that remained behind. Their consumption gains were positive even if they stayed employed in agriculture but

much larger when they switched to non-agriculture or moved farther away.[19] Similar large income gains are reported for Vietnam in Nguyen, Raabe and Grote (2013).

Households with migrants not only experience higher income and consumption, they tend to invest in durables as well. De Brauw and Giles (2018) find significant increases in consumption in Chinese rural areas, especially for poorer households, and in investments of both poorer and richer households. They also find that poorer households tend to invest more in housing and durable goods while richer households tend to invest more in non-agricultural production.

The studies discussed above are based on surveys which are not nationally representative. Empirically, there is thus a concern as to whether these surveys are subject to selection biases which may artificially inflate or deflate estimates of returns to migration. Lagakos et al. (2020) examine the returns to migration for rural-urban migrants using nationally representative surveys in China, Ghana, Indonesia, Malawi, South Africa, and Tanzania. The authors rely on nationally representative panel surveys which made considerable efforts to track migrants across space. Estimated returns average about 25 percent across these six countries, which is still substantial.

Estimated returns to migration from experimental studies are also found to be large. In a randomized control experiment in rural Bangladesh, Bryan, Chowdhury and Mobarak (2014) provide an $8.50 incentive to households to help them send at least a member temporarily to other areas during the lean season. The study area is located in Northern Bangladesh where many rural households are on the brink of starvation during the lean season. Migration induced by this intervention increased food and non-food expenditures of migrants' family members remaining at the origin by 30%–35% and improved their caloric intake by 550–700 calories per person per day. From the randomization of a micro-finance program in rural China, Cai (2020) estimates that migrants experienced increases in earnings of around 36 percent relative to the mean of the control group. The returns estimated in these experimental studies are actually similar in magnitude to those found for Tanzania by Beegle, De Weerdt, and Dercon (2014).

There is also evidence of similar effects from quasi experimental studies in which population was moved voluntarily (as in resettlement programs). Bazzi et al. (2016) studied the Indonesian transmigration program which relocated two million migrants from rural Java and Bali to new

[19] Observe that higher incomes in urban areas compared to rural areas does not preclude that migrants could be discriminated against. For instance, Song (2016) shows that, in China, holders of rural hukous are paid less than holders of urban hukous working in State Owned Enterprises in the urban sector.

rural settlements in the Outer Islands. They report that in the early years of the program 82 percent of the resettled households reported to have equal or higher income after migration.

Assessing returns to migration, it is noticeable that people tend to have preference for the places where they grew up, which may lead them to live in areas with lower income opportunities. Several studies provide evidence of large income gains when population were moved either through resettlement (Sarvimäki, Uusitalo and Jäntti, 2019, Abramitzky, Boustan, Connor, 2020) or because of natural disasters (Nakamura, Sigurdsson and Steinsson, forthcoming). The income gains are not limited to the migrants' generation only as their children also experience higher earnings. Abramitzky et al. (forthcoming) find that intergenerational mobility of migrants to the United States is greater than that of natives. They argue that this may be due to the fact that migrants were more likely than natives to move to areas that offered better prospects for their children.

The returns to rural-urban migration appear to be quite large even if one takes the average estimate from nationally representative studies. Bryan, Chowdhury and Mobarak (2014) note that even with such large returns, most households do not temporarily send member(s) to outside areas for work. This is because the utility cost of migration appears to be very large: Households that are close to subsistence levels fear taking the risk of incurring the migration cost while not being able to find a job with potentially serious consequences for their food security. The implication of this finding is that insurances and nudges can be used to stimulate migration. Consistent with this intuition, Bryan, Chowdhury and Mobarak (2014) find that the small nudge of $8.50 they provide in their experiment induced 22% of households to send a seasonal migrant, and that treated households were 8–10 percentage points more likely to re-migrate 1 and 3 years after the incentive was removed. Building a model to replicate the results from the same experiment, Lagakos, Mobarak and Waugh (2018) find that the welfare gain from subsidizing migration arises mainly from the provision of insurance opportunities in periods when households are vulnerable. The findings from Bryan, Chowdhury and Mobarak (2014) suggest that small assistance on the part of the government may be sufficient to induce poorer people living in vulnerable areas to take advantage of better opportunities in nearby urban areas through temporary migration. This finding is particularly relevant for designing policy responses in places which are vulnerable to climate change and conflict.

4.2. Effects on the health and psychology of migrants

The large income gains from migration but low actual migration rates suggest the presence of high migration costs such as monetary and psychological costs, which we discussed in Section 3. In this subsection, we review evidence regarding the impacts of migration on physical and mental health. Impacts on health on a prior basis are ambiguous as positive health impacts from income effects can be counterbalanced by adverse living conditions. Lu, Kandilov and Zhu (2020) find that rural-urban migrants in China, especially younger ones, experience a decline in their self-reported health, which they attribute to changes in emotional states and social trust. Elderly parents of migrants left behind in the rural areas are also more likely to be in poor health (Xiang, Jiang, and Zhong, 2016).

There is also evidence of adverse psychological costs associated with migration. In a lab experiment in China, Afridi et al. (2015) find that rural-urban migrant students who are assigned a task fare worse than their urban counterparts when they are individually or publicly reminded of their rural Hukou status. This suggests that psychology could explain part of the discrepancy in economic outcomes between migrants and locals in a system that has long stigmatized migrants to cities.

4.3. Economywide impacts of migration

Migration is eventful for the migrants themselves and their families as we have seen above. As migrants respond to differences in expected returns across areas, they are expected to contribute to reducing inter-regional differences in economic outcomes. They are also expected to have an impact on productivity growth throughout the economy. In line with these expectations, this section reviews the relevant literature focusing on two key areas: productivity, and labor market impacts.

Productivity

Rural-urban migration is expected and observed to lead to structural transformation simply because of the sectoral specialization of urban areas into non-agriculture and rural areas into agriculture (for a review, see Desmet and Henderson, 2015). Urban areas host more productive non-agricultural activities and not surprisingly, more educated and skilled workers tend to migrate to urban areas. Firms in urban areas benefit from agglomeration externalities as well. These

factors imply that migration can lead to higher productivity whereas barriers to migration can hamper productivity. Au and Henderson (2006a and 2006b) find that, at the end of the twentieth century, internal migration restrictions in China (due to the Hukou system) prevented Chinese cities to reach an optimal size that would maximize output per worker. As migration restrictions curbed agglomeration and left economies of scale unexploited, this resulted in large productivity losses. Using data between 2000 and 2013, Combes et al. (2017) estimate that rural migration in China in the 2000s had a strong positive externality in the earnings of urban residents thanks to agglomeration effects. Bryan and Morten (2019) estimate the aggregate productivity gains from reducing barriers to internal labor migration in Indonesia, accounting for worker selection and spatial differences in human capital. They find a 22% increase in labor productivity from removing all migration barriers. Reducing migration costs to the US level—a high mobility benchmark—would lead to an 8% productivity boost. The gains from increased migration are, however, highly heterogenous: The origin population that benefits most would see a 104 percent increase in average earnings from a complete barrier removal, or a 37 percent increase from moving to the US benchmark. In the same vein, Tombe and Zhu (2019) report that the decline in trade and migration costs accounted for 36 percent of the aggregate labor productivity growth between 2000 and 2005 in China.

The evidence regarding the impact of migration on firm level productivity, however, is mixed. Using longitudinal data on Chinese manufacturing firms, Imbert et al. (2018) find that, when immigration increases, manufacturing production becomes more labor-intensive in the short run. In the longer run, firms innovate less, move away from capital-intensive technologies, and adopt final products that use low-skilled labor more intensively. While overall employment increases, increased labor supply appears to be directed toward labor-scarce firms which tend to have low total factor productivity. In other words, migrants get selected into relatively lower productive firms. This finding may appear puzzling if we ignore China's abundant supply of relatively cheaper labor. However, a labor-intensive technology is perhaps optimal given China's comparative advantage and the fact that internal migration does appear to have helped China take advantage of its economic strength. Moreover, firm level studies are not able to capture the benefits of greater labor pooling facilitated by migrants, an important source of urban agglomeration externality. This may to some extent explain the difference between the

productivity benefits uncovered in the economywide studies discussed above and the productivity reducing effects of migration found in the firm level study by Imbert et al (2018).

Labor market impacts

The impacts of migration on local wages and employment depend on several structural features of the labor market itself: whether there is rigidity and duality in the labor market as emphasized in the Harris-Todaro model; the extent to which local labor markets are spatially integrated; and whether the skills of migrants are complementary or substitutes to that of native workers. The labor market impacts of migration may also depend on the behavioral responses of local workers in terms of labor force participation, or even in terms of potential shifts to different occupations or to other local labor markets. Finally, short-term and long-term effects may differ as economies adjust in the long run to greater labor supply and increased demand for consumption. We review below the literature focusing on these different aspects of labor markets, distinguishing between impacts of migration on labor market equilibrium outcomes, and on spatial differences in earnings.

Migration, Employment and Wages. We start with a famous study focusing on the labor market impacts of a natural experiment resulting from the massive arrival of Cuban refugees in Florida (Card, 1990). This study found no impact on the unemployment rate and wages of low-skilled workers. Although the influx of Cuban refugees created a large supply shock in local labor markets in Florida, the effects appeared to have dissipated in the long run due to further labor movements across labor markets located within and outside Florida. The interpretation is supported by evidence on the impacts of internal migration in the short run. In a study of internal migration in the United States, Boustan, Fishback and Kantor (2010) found that migration to US cities following the New Deal had little impact on hourly wages but led some residents to shift to partial work or to move away.

Evidence from developing countries is somewhat different. El Badaoui, Strobl and Walsh (2017) who study the impacts of regional migrant inflows on labor markets in Thailand, find that although migrant inflows had no impact on hourly wages, the arrival of migrants decreased weekly earnings through a reduction in the number of hours worked. In the case of internal migration in Indonesia, Kleemens and Magruder (2018) find that, in the short term, internal migration reduced employment, especially in the heavily regulated formal sector where wages are rigid, and employment is the variable of adjustment. At the same time, internal migration had a negative

effect on wages, especially in the more competitive informal sector. Although migrants are on average more skilled than natives, yet migration has larger negative effect on the wages of unskilled workers. This is likely because some of the unemployed formal workers joined the informal market. Confirming the finding the internal migration reduces wages at the destination area, Imbert and Papp (2019) find that reduced migration of unskilled workers in urban areas from a large employment program in Indian rural areas resulted in an increase in urban wages. Finally, Strobl and Valfort (2013) find that weather induced-internal migration in Uganda reduces the probability of employment of non-migrants in destination areas, more so in isolated destination areas (where road density is low).

The evidence above suggests that when labor markets across areas are well integrated, as in the United States, internal migration has little or no effect on local wages and employment. In contrast, in developing countries with dualistic and isolated labor markets along with a predominance of unskilled workers, migration could be more likely to depress local wages and the employment rate. This may partly explain why urban residents in developing countries are often antagonistic to rural migrants. Note also that the studies on developing countries reviewed above provide evidence mostly of short-term effects of migration, which can be negative. In the context of international migration, there is evidence that unskilled migrants usually take over jobs which are at the bottom end of the wage distribution. This allows natives to move up the job ladder, benefitting both migrants and native workers. We are not aware, however, of any study on how these adjustments play out over the medium to longer run in the context of rural-urban migration in developing countries. One can expect steady internal migration to result in institutional reforms governing labor markets as well. For instance, increased flow of migrants due to a reduction in migration costs could lead to a greater integration of local labor markets and reduction of rigidities within local labor markets. The efficiency gains from these changes in labor market institutions are expected to be large and should be topics of future research.

Spatial gap in earnings. Spatial differences in earnings are expected when migration is costly. How large are these differences? Available empirical studies report the presence of a large urban premium in earnings relative rural areas (Henderson, Nigmatulina and Kriticos, 2018, Young, 2013) and a large productivity gap between agriculture and non-agricultural sectors (Gollin, Lagakos and Waugh, 2014). This begs the question of why migration between areas and sectors

is not able to eliminate these differences. In this respect, Bazzi et al.'s (2016) paper on resettled migrants in Indonesia shows that regional productivity differences may overstate the potential gains from migration because of the role played by skill specificity and sorting.[20] The authors find that, due to the transferability of skills and agricultural production techniques, villages that assigned migrants from regions with more similar agroclimatic endowments exhibit higher rice productivity and nighttime light intensity one to two decades down the road. In addition, it is possible that the observed earnings differentials are also driven by sorting of more productive workers in higher paid jobs as has been emphasized in Young (2013), Hamory et al. (2020) and Alvarez (2020). For a more detailed discussion of issues related to sorting, we refer readers to Lagakos (2020).

Keeping the above measurement issues in mind, we now turn to evidence on whether internal migration reduces spatial wage differentials. The evidence from migration of unskilled workers suggests that migration tends to reduce differences in wages across areas. Building on the experiment in Bryan, Chowdhury and Mobarak (2014), Akram, Chowdhury, and Mobarak (2017) estimate that rural wages rise by 2 percent for every 10 percent increase in the rural out-migration rate as rural workers become scarcer. As we discussed earlier, Imbert and Papp (2019) find increases in urban wages due to reduction in migration from rural areas. McKenzie and Rapoport (2007) who examine the impacts of Mexican migrants to the United States on inequality in rural sending communities in Mexico find that such migration reduces inequality across communities with relatively high levels of past migration. Finally, Howell (2017) finds that rural-urban migration leads to a reduction in regional inequality.[21] From the above, the evidence from developing countries thus suggests that migration leads to a decrease in inter-regional inequality in earnings/wages.

Migration's role in reducing inter-regional inequality is also evident from studies which examined responses of regional inequality to economic shocks when migration is restricted. Fan (2019) reports that due to high migration costs in China resulting from Hukou restrictions, international trade shocks increased both between-region inequality among workers with similar skills and

[20] Gains from removing migration costs might be poorly measured by observed returns on migration because of selection. There will be greater gains from lowering migration costs if those with high potential benefits from migration are those who are stuck in rural areas because they happen to face even higher costs (Lagakos, 2020).
[21] In the United States, Winkler and Johnson (2016) find that rural-urban migration reduced ethnic segregation across counties.

within-region inequality between skilled and unskilled workers, with the former accounting for 75 percent of the overall inequality increase. Hu (2002) develops a model with a similar prediction for increasing inequality between coastal and interior regions of China due to high migration costs and the inability of local labor markets to adjust to economic shocks. However, none of the reviewed studies on China considered heterogenous migration responses of natives and migrants as emphasized in Cadena and Kovak (2016). To the best of our knowledge, such studies remain to be carried out in developing country contexts.

In some cases, however, migration could lead to an increase in interregional inequality. For instance, if all skilled and rich workers sort into one region and unskilled and poorer workers into another region, then it mechanically leads to an increase in regional inequality even when there is no income effect from migration. This is exacerbated when public goods are financed locally and/or agglomeration externalities are stronger for skilled workers. For instance, in our above example, people living in a richer region may have better schools and amenities which could potentially generate intergenerational persistence in inequality. In this respect, Diamond (2016) reports that while local labor demand changes resulted in increased skill sorting in the United States, this was further fueled by endogenous increases in amenities within higher skill cities. She finds that changes in cities' wages, rents, and endogenous amenities increased inequality between high-school and college graduates by more than suggested by the increase in the college wage gap alone. There is also evidence of migrants segregating themselves along ethnic and regional lines as observed in Indian slums (Thachil, 2017). While disparities across neighborhoods within a city are clearly evident to observers in developing countries, research on endogenous sorting due to migration and its impact on inequality remains sparse and should be a priority.

CONCLUDING REMARKS ON RESEARCH GAPS AND POLICY LESSONS

The migration literature has grown exponentially since the seminal contributions of Harris-Todaro (1969, 1970). The review of the recent literature paints a complex and subtle picture of rural-urban migration. The evidence indicates that rural-urban migration is driven by a multitude of factors ranging from seeking better opportunities in life to forced migration from one's native region due to climate shocks, conflicts and wars. The returns to migration are large and so are the costs of migration. The evidence reviewed supports the notion that migration barriers—

particularly policy-induced ones—prevent labor market adjustment and hinder structural transformation, potentially leading to serious negative economic consequences in terms of growth and aggregate welfare and are thus not desirable.

Our review of the literature also shed light on major gaps in research. While rural-to-urban migration has received extensive attention in the literature, several other forms of migration remain sparsely studied. Evidence from developing countries suggests that rural-to-rural, urban-to-urban, circular, and return migrations are equally if not more prevalent forms of migration (Cattaneo and Robinson, 2020). The current literature, however, is thin on what drives these other types of migration, how migrants choose among the different types, and how these different internal migration patterns may affect productivity, welfare, structural transformation, agglomeration and economic growth.

The literature on migration in response to disasters and climate shocks is currently growing fast, though much of this literature focuses on permanent migration mostly due to data limitations and the difficulty to observe short duration moves. The current COVID-19 pandemic has led to large return migration (from urban to rural areas) in many developing countries, notably in India. Whether these initially temporary moves will last permanently remains to be seen as the pandemic runs through its course. But this raises the interesting question of whether the type and size of shocks matter to determine temporary *vs* permanent migration, and whether there will be persistent effects even when migration is temporary. The work on temporary internal migration in developing countries has been very limited although temporary international migration is believed to have serious financial and human capital implications both in sending and receiving countries (Dustmann and Gorlach, 2016). Although climatic and other shocks may push people out of their usual residence and into urban areas, little is known regarding the extent to which push *vs* pull migration might differentially affect destination areas. Is the potential for agglomeration effects in destination urban areas weaker under push than under pull migration? Are disaster-driven migrants less efficiently optimizing their location choices? What is the role of policy to accompany climate refugees to ensure productive impacts?

In many developing countries, women are geographically more mobile than men due to customary arrangements in the marriage markets, which require women to join their spouse's family upon

marriage.[22] With economic development, more women are joining the labor force and moving to cities—sometimes temporarily—to avail employment opportunities, for instance in garment factories. Yet, the migration literature almost exclusively focuses on the migration of young working-age men. With the increasing feminization of labor force and women accounting for a greater share of labor migrants, the migration patterns, causes and consequences of women's labor migration should be another priority area for future research.

For many developing countries, both international migration and internal migration are of very significant economic importance. However, these two types of migration are typically analyzed in complete isolation of each other. How migrants sort themselves between different international and internal migration and the implications such sorting have for economic well-being and inequality should be yet another priority of future research.

In view of these research gaps, it is clear that furthering the research on internal migration will demand much higher quality data than what is currently available. Much of the research gaps in the literature on developing countries are in fact due to data unavailability. Currently, the main sources of data are censuses which have relatively good spatial resolution but insufficient frequency (as data is typically collected once every 10 years), household surveys whose spatial coverage is limited though they typically collect more detailed information, and administrative data which are still scarce and incomplete in developing countries (see Kirchberger (2020) for detailed discussion on the data issues). With the exception of a few RCTs and panel surveys, migrants are not tracked over time, making it difficult to examine temporary, return, and circular migration. Recent studies increasingly use cell phone call data records (tower pings) to trace migration (Blumenstock, Chi and Tan 2019, Lai et al., 2020) and trace from smartphone apps but such data lacks key information on individual characteristics of migrants and the population coverage of currently available to researchers is extremely small, introducing the possibility of a large selection bias. The increasing availability of big data on population movements from a variety of sources offers opportunities for better tracking of migrants, which in turn will help pursue a new research agenda on rural-urban migration. Yet, there is urgent need to also invest in

[22] In the 2001 Indian census, 65 percent of women's internal migration movement was motivated by marriage and only 3 percent by employment (Food and Agricultural Organization, 2018).

periodic detailed surveys of migrants in developing countries to produce data sets that will support research on migration.

Our review also shed light on some important policy implications. Studies show that restrictions can either lead to insufficient migration hindering productivity and agglomeration (Au and Henderson, 2006a and 2006b) or inefficient patterns of migration. Fortunately, the policy trend seems to be towards removal of migration restrictions (with the end of Apartheid in South Africa, and the weakening of the Hukou system in China) although some opposition to easing restrictions remain.

Inefficiencies, however, are not necessarily due to migration restrictions and can arise from externalities, in particular due to information imperfections and credit constraints. This means that migrants may need helping hands in overcoming most of these constraints. Such helping hands appear to be quite effective as recent studies based on RCTs show that small nudges and information interventions can accelerate migration (Bryan, Chowdhury, Mobarak, 2014; Baseler, 2019). To ensure efficient migration, policy makers should focus on making information about destinations including job and housing opportunities easily accessible to potential migrants. The widespread access to cell phones along with traditional media sources can be utilized to provide this information. A typical migrant support program should also include training for job search, social assistance (including loans) to finance migration and job search, and assistance for assimilation of migrants in the destination community. It should also include provision of insurance to families at the origin to withstand adverse shocks (Lagakos, Mobarak and Waugh, 2018). Many countries rely on the existing diaspora to help migrants with access to job, housing and other public services. An important point to emphasize here is that a piecemeal policy of relaxing a specific constraint on migration is not as effective as an integrated migration support program because of presence of complementarities. For instance, in a simulation model, Liang, Song and Timmins (2020) find that reducing migration costs in China can more effectively move workers from unproductive inland regions to productive coastal regions in China if restrictions on the supply of housing are also attenuated (i.e., if housing supply is made more elastic) at the same time. In their assessment of the economic impact of the Chinese highway system, Bosker, Deichmann and Roberts (2018) find that constructing the highway system would have resulted in much higher welfare gains if combined with the removal of migration restrictions, therefore allowing workers to relocate to places where they would be more productive.

In most developing countries, important government policies and investments are implemented without regard to their consequences for migration. Popular examples include transport investments, restrictions on land transactions in rural areas or workfare programs in rural/urban areas. As our review shows, these policies tend to affect migration's benefits and costs. As a general rule, policy makers in developing countries should take migration responses into account in designing policies and investment programs as migration responses could offset the effects of these policies. Researchers evaluating such policies and programs should do the same.

REFERENCES

Abramitzky, R., Boustan, L. P., & Connor, D. (2020). Leaving the enclave: Historical evidence on immigrant mobility from the industrial removal office (No. w27372). National Bureau of Economic Research.

Abramitzky, R., Boustan, L. P., & Eriksson, K. (2013). Have the poor always been less likely to migrate? Evidence from inheritance practices during the age of mass migration. *Journal of Development Economics*, 102, 2-14.

Abramitzky, R., Boustan, L. P., Jácome, E., & Pérez, S. (forthcoming). Intergenerational Mobility of Immigrants in the US over Two Centuries, *American Economic Review*.

Afridi, F., Li, S. X., & Ren, Y. (2015). Social identity and inequality: The impact of China's hukou system. *Journal of Public Economics*, 123, 17-29.

Aker, J., Clemens, M., & Ksoll, C. (2011). Mobiles and mobility: The Effect of Mobile Phones on Migration in Niger. *Proceedings of the German Development Economics Conference*, Berlin 2011, No. 2, http://hdl.handle.net/10419/48341

Akram, A. A., Chowdhury, S., & Mobarak, A. M. (2017). Effects of emigration on rural labor markets (No. w23929). National Bureau of Economic Research.

Alvarez, J. A. (2020). The agricultural wage gap: Evidence from Brazilian micro-data. *American Economic Journal: Macroeconomics*, 12(1), 153-73.

Ardington, C., Case, A., & Hosegood, V. (2009). Labor supply responses to large social transfers: Longitudinal evidence from South Africa. *American economic journal: Applied economics*, 1(1), 22-48.

Au, C. C., & Henderson, J. V. (2006a). How migration restrictions limit agglomeration and productivity in China. *Journal of Development Economics*, 80(2), 350-388.

Au, C. C., & Henderson, J. V. (2006b). Are Chinese cities too small?. The Review of Economic Studies, 73(3), 549-576.

Barrios, S., Bertinelli, L., & Strobl, E. (2006). Climatic change and rural-urban migration: The case of sub-Saharan Africa. *Journal of Urban Economics*, 60(3), 357-371.

Bartik, T. J. (1991). Who benefits from state and local economic development policies? W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan.

Baseler, T. (2021). Hidden Income and the Perceived Returns to Migration: Experimental Evidence from Kenya. Available at SSRN 3534715.

Basu, S., & Pearlman, S. (2017). Violence and migration: evidence from Mexico's drug war. *IZA Journal of Development and Migration*, 7(1), 18.

Bauernschuster, S., Falck, O., Heblich, S., Suedekum, J., & Lameli, A. (2014). Why are educated and risk-loving persons more mobile across regions?. *Journal of Economic Behavior & Organization*, 98, 56-69.

Bazzi, S., Gaduh, A., Rothenberg, A. D., & Wong, M. (2016). Skill transferability, migration, and development: Evidence from population resettlement in Indonesia. *American Economic Review*, 106(9), 2658-98.

Bazzi, S., Gaduh, A., Rothenberg, A. D., & Wong, M. (2019). Unity in diversity? how intergroup contact can foster nation building. *American Economic Review*, 109(11), 3978-4025.

Beegle, K., De Weerdt, J., & Dercon, S. (2011). Migration and economic mobility in Tanzania: Evidence from a tracking survey. *Review of Economics and Statistics*, 93(3), 1010-1033.

Bell, M., Bernard, A., Charles-Edwards, E., & Zhu, Y. (2020). *Internal migration in the countries of Asia: A Cross-national comparison*. Springer.

Bell, M., & Charles-Edwards, E. (2013). Cross-national comparisons of internal migration: an update of global patterns and trends. United Nations Department of Economic and Social Affairs, Technical Paper No. 2013/1.

Bell, M., Charles-Edwards, E., Bernard, A., & Ueffing, P. (2018). Global trends in internal migration. Chapter 4 (p. 76-97) in *Internal migration in the developed world: Are we becoming less mobile*, Champion, T., Cooke, T., & Shuttleworth, I. (Eds.). Routledge.

Bell, M., Charles-Edwards, E., Ueffing, P., Stillwell, J., Kupiszewski, M., & Kupiszewska, D. (2015). Internal migration and development: Comparing migration intensities around the world. *Population and Development Review*, 41(1), 33-58.

Blumenstock, J. E., Chi, G., & Tan, X. (2019). Migration and the value of social networks. CEPR Discussion Paper 13611.

Bosker, M., Deichmann, U., & Roberts, M. (2015). Hukou and highways: the impact of China's spatial development policies on urbanization and regional inequality. *Regional Science and Urban Economics*, 71, 91-109.

Boustan, L. P., Fishback, P. V., & Kantor, S. (2010). The effect of internal migration on local labor markets: American cities during the Great Depression. *Journal of Labor Economics*, 28(4), 719-746.

Brueckner, J. K., & Lall, S. (2015) Cities in Developing Countries: Fueled by Rural-Urban Migration, Lacking in Tenure Security, and Short of Affordable Housing, in G. Duranton, J.V. Henderson and W.C. Strange, eds., *Handbook of Regional and Urban Economics*, Vol. 5B, Elsevier, pp. 1399-1455.

Bryan, G., Chowdhury, S., & Mobarak, A. M. (2014). *Underinvestment in a profitable technology: The case of seasonal migration in Bangladesh*. Econometrica, 82(5), 1671-1748.

Bryan, G., & Morten, M. (2019). The aggregate productivity effects of internal migration: Evidence from Indonesia. *Journal of Political Economy*, 127(5), 2229-2268.

Cadena, B. C., & Kovak, B. K. (2016). Immigrants equilibrate local labor markets: Evidence from the Great Recession. *American Economic Journal: Applied Economics*, 8(1), 257-90.

Cai, S. (2020). Migration under liquidity constraints: Evidence from randomized credit access in China. *Journal of Development Economics*, 142, 102247.

Card, D. (1990). The impact of the Mariel boatlift on the Miami labor market. ILR Review, 43(2), 245-257.

Cattaneo, A., & Robinson, S. (2020). Multiple moves and return migration within developing countries: A comparative analysis. *Population, Space and Place*, 21 pages.

Chernina, E., Dower, P. C., & Markevich, A. (2014). Property rights, land liquidity, and internal migration. *Journal of Development Economics*, 110, 191-215.

Combes, P. P., Démurger, S., & Li, S. (2017). Productivity Gains from Agglomeration and Migration in the People's Republic of China between 2002 and 2013. *Asian Development Review*, 34(2), 184-200.

Dahl, G. B. (2002). Mobility and the return to education: Testing a Roy model with multiple markets. *Econometrica*, 70(6), 2367-2420.

Dang, H. A. H., Huang, Y., & Selod, H. (2020). Children Left Behind in China: The Role of School Fees. *IZA Journal of Development and Migration*, 11(1).

De Brauw, A., & Giles, J. (2018). Migrant labor markets and the welfare of rural households in the developing world: evidence from China. *The World Bank Economic Review*, 32(1), 1-18.

De Janvry, A., Emerick, K., Gonzalez-Navarro, M., & Sadoulet, E. (2015). Delinking land rights from land use: Certification and migration in Mexico. *American Economic Review*, 105(10), 3125-49.

De la Roca, J. (2017). Selection in initial and return migration: Evidence from moves across Spanish cities. *Journal of Urban Economics*, 100, 33-53.

De la Roca, J., & Puga, D. (2017). Learning by working in big cities. *The Review of Economic Studies*, 84(1), 106-142.

Dercon, S., Krishnan, P., & Krutikova, S. (2013). Changing Living Standards in Southern Indian Villages 1975–2006: Revisiting the ICRISAT Village Level Studies. *Journal of Development Studies*, 49(12), 1676-1693.

Desmet, K., & Henderson, J. V. (2015). The geography of development within countries. In *Handbook of Regional and Urban Economics* (Vol. 5, pp. 1457-1517). Elsevier.

Détang-Dessendre, C., Partridge, M. D., & Piguet, V. (2016). Local labor market flexibility in a perceived low migration country: The case of French labor markets. *Regional Science and Urban Economics*, 58, 89-103.

Diamond, R. (2016). The determinants and welfare implications of US workers' diverging location choices by skill: 1980-2000. *American Economic Review*, 106(3), 479-524.

Dustmann, C., & Görlach, J. S. (2016). The Economics of Temporary Migrations. *Journal of Economic Literature*, 54(1), 98-136.

Eggleston, K., Sun, A., & Zhan, Z. (2018). The impact of rural pensions in China on labor migration. *The World Bank Economic Review*, 32(1), 64-84.

El Badaoui, E., Strobl, E., & Walsh, F. (2017). Impact of Internal Migration on Labor Market Outcomes of Native Males in Thailand. *Economic Development and Cultural Change*, 66(1), 147-177.

Emran, M. S., & Shilpi, F. (2017). Land market restrictions, women's labor force participation, and wages in a rural economy. *Oxford Bulletin of Economics and Statistics*, 79(5), 747-768.

Engel, S., & Ibáñez, A. M. (2007). Displacement due to violence in Colombia: A household-level analysis. *Economic Development and Cultural Change*, 55(2), 335-365.

Fafchamps, M., & Shilpi, F. (2008). Subjective welfare, isolation, and relative consumption. *Journal of Development Economics*, 86(1), 43-60.

Fafchamps, M., & Shilpi, F. (2013). Determinants of choice of migration destination. *Oxford Bulletin of Economics and Statistics*, 75(3), 388-409.

Fan, J. (2019). Internal geography, labor mobility, and the distributional impacts of trade. *American Economic Journal: Macroeconomics*, 11(3), 252-88.

Farré, L., & Fasani, F. (2013). Media exposure and internal migration—Evidence from Indonesia. *Journal of Development Economics*, 102, 48-61.

Feler, L., & Henderson, J. V. (2011). Exclusionary policies in urban development: Under-servicing migrant households in Brazilian cities. *Journal of Urban Economics*, 69(3), 253-272.

Food and Agricultural Organization (2018) *The State of Food and Agriculture 2018. Migration, agriculture and rural development*. Rome, 174 pages.

Fu, Y., & Gabriel, S. A. (2012). Labor migration, human capital agglomeration and regional development in China. *Regional Science and Urban Economics*, 42(3), 473-484.

Giles, J., & Mu, R. (2018). Village political economy, land tenure insecurity, and the rural to urban migration decision: evidence from China. *American Journal of Agricultural Economics*, 100(2), 521-544.

Gollin, D., Lagakos, D., & Waugh, M. E. (2014). The agricultural productivity gap. *The Quarterly Journal of Economics*, 129(2), 939-993.

Grace, K., Hertrich, V., Singare, D., & Husak, G. (2018). Examining rural Sahelian out-migration in the context of climate change: An analysis of the linkages between rainfall and out-migration in two Malian villages from 1981 to 2009. *World Development*, 109, 187-196.

Gröger, A., & Zylberberg, Y. (2016). Internal labor migration as a shock coping strategy: Evidence from a typhoon. *American Economic Journal: Applied Economics*, 8(2), 123-53.

Guriev, S., & Vakulenko, E. (2015). Breaking out of poverty traps: Internal migration and interregional convergence in Russia. *Journal of Comparative Economics*, 43(3), 633-649.

Hamory, J., Kleemans, M., Li, N. Y., & Miguel, E. (2020). Reevaluating agricultural productivity gaps with longitudinal microdata. *Journal of the European Economic Association*. Published 25 November 2020.

Harris, J. R., & Todaro, M. P. (1970). Migration, unemployment and development: a two-sector analysis. *The American Economic Review*, 60(1), 126-142.

Hauer, M. E., Fussell, E., Mueller, V., Burkett, M., Call, M., Abel, K., ... & Wrathall, D. (2020). Sea-level rise and human migration. *Nature Reviews Earth & Environment*, 1(1), 28-39.

Hayashi, F., & Prescott, E. C. (2008). The depressing effect of agricultural institutions on the prewar Japanese economy. *Journal of Political Economy*, 116(4), 573-632.

Henderson, J. V., Nigmatulina, D., & Kriticos, S. (2018). Measuring urban economic density. World Bank Policy Research Working Paper WPS8678. The World Bank.

Henderson, J. V., Storeygard, A., & Deichmann, U. (2017). Has climate change driven urbanization in Africa? *Journal of Development Economics,* 124, 60-82.

Howell, A. (2017). Impacts of migration and remittances on ethnic income inequality in rural China. *World Development*, 94, 200-211.

Hu, D. (2002). Trade, rural–urban migration, and regional income disparity in developing countries: a spatial general equilibrium model inspired by the case of China. *Regional Science and Urban Economics*, 32(3), 311-338.

Hu, F., Xu, Z., & Chen, Y. (2011). Circular migration, or permanent stay? Evidence from China's rural–urban migration. *China Economic Review,* 22(1), 64-74.

Imbert, C., & Papp, J. (2019). Short-term Migration, Rural Public Works, and Urban Labor Markets: Evidence from India. *Journal of the European Economic Association*, 18(2), 927-963.

Imbert, C., & Papp, J. (2020). Costs and benefits of rural-urban migration: Evidence from India. *Journal of Development Economics*, 102473.

Imbert, C., Seror, M., Zhang, Y. & Zylberberg, Y. (2018) Migrants and Firms: Evidence from China. *CESifo Working Paper No. 7440*.

Internal Displacement Monitoring Centre and Norwegian Refugee Council (2020). *Global Report on Internal Displacement*, 136 pages.
Joseph, G., & Wodon, Q. (2013). Is Internal Migration in Yemen Driven by Climate or Socio-economic Factors? *Review of International Economics*, 21(2), 295-310.
Katz, E., & Stark, O. (1986). Labor migration and risk aversion in less developed countries. *Journal of Labor Economics*, 4(1), 134-149.
Kim, S. (2007). Immigration, industrial revolution and urban growth in the United States, 1820-1920: Factor endowments, technology and geography (No. w12900). National Bureau of Economic Research.
Kim, S., & Margo, R. A. (2004). Historical perspectives on US economic geography. In *Handbook of Regional and Urban Economics* (Vol. 4, pp. 2981-3019). Elsevier.
Kirchberger, M. (2020) Measuring internal migration. Mimeo.
Kinnan, C., Wang, S. Y., & Wang, Y. (2018). Access to migration for rural households. *American Economic Journal: Applied Economics*, 10(4), 79-119.
Kleemans, M., & Magruder, J. (2018). Labour market responses to immigration: Evidence from internal migration driven by weather shocks. *The Economic Journal*, 128(613), 2032-2065.
Kone, Z. L., Liu, M. Y., Mattoo, A., Ozden, C., & Sharma, S. (2018). Internal borders and migration in India. *Journal of Economic Geography*, 18(4), 729-759.
Kosec, K., Ghebru, H., Holtemeyer, B., Mueller, V., & Schmidt, E. (2018). The effect of land access on youth employment and migration decisions: Evidence from rural Ethiopia. *American Journal of Agricultural Economics*, 100(3), 931-954.
Kubik, Z., & Maurel, M. (2016). Weather shocks, agricultural production and migration: Evidence from Tanzania. *The Journal of Development Studies*, 52(5), 665-680.
Lagakos, D. (2020). Urban-rural gaps in the developing world: Does internal migration offer opportunities?. *Journal of Economic Perspectives*, 34(3), 174-92.
Lagakos, D., Marshall, S., Mobarak, A. M., Vernot, C., & Waugh, M. E. (2020). Migration Costs and Observational Returns to Migration in the Developing World. *Journal of Monetary Economics*, 113, 138-154.
Lagakos, D., Mobarak, A. M., & Waugh, M. E. (2018). The welfare effects of encouraging rural-urban migration (No. w24193). National Bureau of Economic Research.
Lai, S., Erbach-Schoenberg, E.z., Pezzulo, C., Ruktanonchai, N. W., Sorichetta, A., Steele, J., . & Tatem, A. J. (2019). Exploring the use of mobile phone data for national migration statistics. *Palgrave communications*, 5(1), 1-10.
Lall, S. V., Selod, H., & Shalizi, Z. (2006). Rural-urban migration in developing countries: A survey of theoretical predictions and empirical findings. World Bank Policy Research Working Paper WPS3915. The World Bank.
Lall, S. V., Timmins, C., & Yu, S. (2009). Connecting lagging and leading regions: The role of labor mobility. World Bank Policy Research Working Paper WPS4843. The World Bank.
Lanzona, L. A. (1998). Migration, self-selection and earnings in Philippine rural communities. *Journal of Development Economics*, 56(1), 27-50.
Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *The Manchester Schoo*l, 22(2), 139-191.
Liang, W., Song, R., & Timmins, C. (2020). Frictional Sorting (No. w27643). National Bureau of Economic Research.
Lu, H., Kandilov, I. T., & Zhu, R. (2020). The impact of internal migration on the health of rural migrants: Evidence from longitudinal data in China. *The Journal of Development Studies*, 56(4), 840-855.
Lucas, R. E. (1997). Internal migration in developing countries. In *Handbook of Population and Family Economics*, 1, 721-798.
Lucas, R. E. B. (2016). Internal migration in developing economies: an overview of recent evidence. *Geopolitics, History, and International Relations*, 8(2), 159-191.
McKenzie, D., & Rapoport, H. (2007). Network effects and the dynamics of migration and inequality: Theory and evidence from Mexico. *Journal of development Economics*, 84(1), 1-24.
McKenzie, D., Stillman, S., & Gibson, J. (2010). How important is selection? Experimental vs. non-experimental measures of the income gains from migration. Journal of the European Economic Association, 8(4), 913-945.
Meghir, C., Mobarak, A. M., Mommaerts, C. D., & Morten, M. (2019). Migration and informal insurance (No. w26082). National Bureau of Economic Research.
Meng, L. (2012). Can grain subsidies impede rural–urban migration in hinterland China? Evidence from field surveys. *China Economic Review*, 23(3), 729-741.
Minale, L. (2018). Agricultural productivity shocks, labour reallocation and rural–urban migration in China. *Journal of Economic Geography*, 18(4), 795-821.
Morrison, A. R. (1993). Violence or economics: what drives internal migration in Guatemala?. *Economic Development and Cultural Change*, 41(4), 817-831.

Morten, M. (2019). Temporary migration and endogenous risk sharing in village India. *Journal of Political Economy*, 127(1), 1-46.
Morten, M., & Oliveira, J. (2016). The effects of roads on trade and migration: Evidence from a planned capital city. *NBER Working Paper*, 22158, 43.
Mullan, K., Grosjean, P., & Kontoleon, A. (2011). Land tenure arrangements and rural–urban migration in China. *World Development*, 39(1), 123-133.
Munshi, K. (2020). Social Networks and Migration. *Annual Review of Economics*, 12, 503-524.
Munshi, K., & Rosenzweig, M. (2016). Networks and misallocation: Insurance, migration, and the rural-urban wage gap. *American Economic Review*, 106(1), 46-98.
Mwesigye, F., & Matsumoto, T. (2016). The effect of population pressure and internal migration on land conflicts: implications for agricultural productivity in Uganda. *World Development*, 79, 25-39.
Nakamura, E., Sigurdsson, J., & Steinsson, J. (forthcoming). The gift of moving: Intergenerational consequences of a mobility shock, *Review of Economic Studies*.
Nguyen, L. D., Raabe, K., & Grote, U. (2015). Rural–urban migration, household vulnerability, and welfare in Vietnam. *World Development*, 71, 79-93.
Peri, G., & Sasahara, A. (2019). The impact of global warming on rural-urban migrations: evidence from global big data (No. w25728). National Bureau of Economic Research.
Poelhekke, S. (2011). Urban growth and uninsured rural risk: Booming towns in bust times. *Journal of Development Economics*, 96(2), 461-475.
Poggi, C. (2019). Credit Availability and Internal Migration: Evidence from Thailand. *The Journal of Development Studies*, 55(5), 861-875.
Porcher, C. (2020) Migration with Costly Information. Mimeo.
Ranis, G., & Fei, J. C. (1961). A theory of economic development. *The American Economic Review*, 533-565.
Roback, J. (1982). Wages, rents, and the quality of life. *Journal of political Economy*, 90(6), 1257-1278.
Sarvimäki, M., Uusitalo, R., & Jäntti, M. (2019). Habit formation and the misallocation of labor: evidence from forced migrations. Available at SSRN 3361356.
Shilpi, F., Xu, L., Behal, R., & Blankespoor, B. (2018) *People on the Move: Spatial Mismatch and Migration in Post-Apartheid South Africa*, World Bank.
Shilpi, F., Sangraula, P., & Li, Y. (2014). Voting with their feet? access to infrastructure and migration in Nepal. *Policy Research Working Paper Series* 7047, The World Bank.
Shrestha, M. (2020). Get Rich or Die Tryin': Perceived Earnings, Perceived Mortality Rates, and Migration Decisions of Potential Work Migrants from Nepal. *The World Bank Economic Review*, 34(1), 1-27.
Stark, O. (1991) *The Migration of Labor*. Blackwell, 406 pages.
Stark, O., & Levhari, D. (1982). On migration and risk in LDCs. *Economic Development and Cultural Change*, 31(1), 191-196.
Stark, O., & Lucas, R. E. B. (1988). Migration, remittances, and the family. *Economic Development and Cultural Change*, 36(3), 465-481.
Strobl, E., & Valfort, M. A. (2015). The effect of weather-induced internal migration on local labor markets. Evidence from Uganda. *The World Bank Economic Review*, 29(2), 385-412.
Sun, L. (2019). *Rural Urban Migration and Policy Intervention in China: Migrant Workers' Coping Strategies*. Palgrave Macmillan.
Thachil, T. (2017). Do rural migrants divide ethnically in the city? Evidence from an ethnographic experiment in India. *American Journal of Political Science*, 61(4), 908-926
Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of Political Economy*, 64(5), 416-424.
Todaro, M. P. (1969). A model of labor migration and urban unemployment in less developed countries. *American Economic Review*, 59(1), 138-148.
Tombe, T., & Zhu, X. (2019). Trade, migration, and productivity: A quantitative analysis of china. *American Economic Review*, 109(5), 1843-72.
Winkler, R. L., & Johnson, K. M. (2016). Moving toward integration? Effects of migration on ethnoracial segregation across the rural-urban continuum. *Demography*, 53(4), 1027-1049.
Xiang, A. O., Jiang, D., & Zhong, Z. H. A. O. (2016). The impact of rural–urban migration on the health of the left-behind parents. China Economic Review, 37, 126-139.
Young, A. (2013). Inequality, the urban-rural gap, and migration. *The Quarterly Journal of Economics*, 128(4), 1727-1785.
Zelinsky, W. (1971). The hypothesis of the mobility transition. *Geographical review*, 219-249.