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**Working Paper**

## Drivers of mobility

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## WIDER Working Paper 2020/6

### **Drivers of mobility**

Patrizio Piraino\*

January 2020

**Abstract:** Empirical studies in developing countries tend to find higher levels of socioeconomic persistence across generations compared with those of high-income economies. However, there have been relatively few advances in the identification of the drivers of such higher levels of intergenerational persistence. By focusing on relevant evidence from developing and emerging economies, this paper points to some of the potential drivers of mobility that are either outside those typically considered in high-income countries or likely to be of greater relevance in the developing world. The paper builds on the standard model of intergenerational mobility to discuss the appropriateness of some of its assumptions in a developing-country context. It will then advance some suggestions for future theoretical and empirical investigations of social mobility in the Global South.

**Key words:** intergenerational mobility, Global South, market exclusion

**JEL classification:** D63, J62, O15

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## 1 Introduction

A large empirical literature on intergenerational income mobility shows consistent evidence of positive correlations between the income of parents and that of their adult offspring. This is true for every society for which we have data and for several types of income (e.g. labour market earnings, total market income, welfare receipts, etc.). Björklund and Jäntti (2009), Black and Devereux (2011), and Corak (2013) provide comprehensive reviews of this literature. The existing international evidence has allowed researchers and policymakers to identify a number of ‘stylized facts’ on the multitude of factors that can help to explain the observed variation in mobility levels across and within countries. This largely descriptive literature, while falling short of identifying the relative role of alternative causal mechanisms, offers very plausible hints about where to look to improve social mobility.

At the same time, it is notable that most of the stylized facts on possible drivers of mobility are derived from empirical analyses of high-income countries. Since only a relatively small share of the world population currently lives and works in this group of countries, a natural question is whether the findings from these regions can easily be extended to the much larger pool of the world population living in the developing world. Empirical studies of intergenerational mobility in developing countries tend to find higher levels of economic status persistence across generations compared with those of developed economies (Brunori et al. 2013; Narayan et al. 2018), but there have been relatively few advances in the identification of the underlying drivers of this higher persistence. This is due to a combination of data availability and, to some extent, an over-emphasis in the economics literature on analyses of the Global North (e.g. Europe/North America). In fact, it is fair say that even the existing theoretical contributions in this literature appear to be implicitly benchmarked on structural processes that may be more applicable to the developed world.

The purpose of this paper is to contribute to reducing this gap in the literature and offering a more complete picture of social mobility across the globe, including in developing and emerging economies. It will point out some of the potential drivers of mobility that are either outside those typically considered in high-income countries or likely to be of greater relevance in the developing world. I will begin with a simplified description of standard models of intergenerational income mobility, followed by a discussion of the appropriateness of some of their underlying assumptions in a developing-country context. I will then advance some suggestions for future theoretical and empirical investigations of social mobility in the Global South.

## 2 Theoretical framework

Empirical analyses of intergenerational mobility have largely relied on the classic model developed by Becker and Tomes (1979, 1986)—and subsequent adaptations and extensions—for a theoretical underpinning of the intergenerational income regression typically estimated in the literature. In its most basic versions, the model assumes a two-period utility framework for families consisting of one parent and one child. In the first period, the parent faces a budget constraint which dictates the allocation of disposable income between own consumption and investment in the child’s human capital. In the second period, the child earns income as a function of the acquired human capital and other endowments. I discuss here a simplified version of the standard model using the adaptation presented in Solon (2014).

## 2.1 Parental investments and heritable endowments

Following Solon (2014), we can begin by expressing the income-generating function for the child as

$$\ln(Y_t) = \mu + \gamma_t H_t \quad (1)$$

where  $Y_t$  is the child's income,  $H_t$  is their human capital, and  $\mu$  is the intercept for the  $t$  generation. The returns to human capital in the labour market are captured by  $\gamma_t$ .

Next, we can specify the child's human capital as depending on the parent's investment in the previous period,  $I_{t-1}$ , and on the composite effect of other endowed attributes:

$$H_t = \vartheta \ln(I_{t-1}) + E_t \quad (2)$$

The parameter  $\vartheta$  in Equation 2 represents the 'effectiveness' of parental investment in generating human capital. Substituting Equation 2 into Equation 1 gives

$$\ln(Y_t) = \mu + \gamma_t \vartheta \ln(I_{t-1}) + \gamma_t E_t \quad (3)$$

A key assumption of the model is that  $E_t$ , which is independent from parental investments, is transmitted across generations according to a first-order autoregressive process:

$$E_t = \kappa + h E_{t-1} + \omega_t \quad (4)$$

That is, the child's endowed attributes are partly inherited from the previous generation according to the heritability parameter  $h \in [0,1]$ . As we will see below, the parameter  $h$  plays an important role in these models. These inherited endowments encompass a variety of genetic, cultural, and environmental attributes that are transmitted across generations via a mechanic heritability process—i.e. they are independent of parental investments in the child's human capital (Solon 2004, 2014). Examples of these attributes may be genetic ability or non-genetic aspects of family culture, attitudes, and connections that children gain by virtue of belonging to a given family.

Parents are aware of Equations 1 to 4 and decide the income allocation between own consumption,  $C_{t-1}$ , and investments in the child's human capital,  $I_{t-1}$ , by maximizing a Cobb-Douglas utility function of the form

$$U = (1 - \alpha) \ln(C_{t-1}) + \alpha \ln(Y_t) \quad (5)$$

subject to the budget constraint

$$Y_{t-1} = C_{t-1} + I_{t-1} \quad (6)$$

where  $Y_{t-1}$  and  $Y_t$  are, respectively, the parent's and the child's income. The parameter  $\alpha$  represents parental altruism, which determines the weight that parents assign to children's future earnings relative to current own consumption.

The budget constraint and Equation 3 allow us to rewrite the parent's utility as

$$U = (1 - \alpha) \ln(Y_{t-1} - I_{t-1}) + \alpha \mu + \alpha \gamma_t \vartheta \ln(I_{t-1}) + \alpha \gamma_t E_t \quad (7)$$

which, after solving the first-order condition, yields the optimal investment in the child's human capital:

$$I_{t-1} = \left[ \frac{\alpha \gamma_t \vartheta}{1 - \alpha(1 - \gamma_t \vartheta)} \right] Y_{t-1} \quad (8)$$

Intuitively, Equation 8 suggests that parental investments in the child's human capital will be higher for richer and more altruistic parents, and for periods of greater returns to human capital.

This simple model allows a rationalization of the intergenerational earnings elasticity (IGE) typically estimated in the empirical literature to measure the degree of economic mobility in a given society. To see this, one can substitute the optimal investment amount Equation 8 into the child's earnings function Equation 3, to obtain:

$$\ln(Y_t) = \mu^* + \gamma_t \vartheta \ln(Y_{t-1}) + \gamma_t E_t \quad (9)$$

As explained by Solon (2014), this is a first-order autoregression of  $\ln(Y_t)$  with a serially correlated error that also follows a first-order autoregression.<sup>1</sup> In steady state—i.e. when  $\text{Var}[\ln(Y_t)] = \text{Var}[\ln(Y_{t-1})]$ —the slope coefficient in Equation 9 is the commonly estimated IGE, which will be equal to the sum of the two autoregressive parameters divided by one plus their product:

$$IGE = \frac{\gamma_t \vartheta + h}{1 + \gamma_t \vartheta h} \quad (10)$$

Expressing the IGE as in Equation 10 clarifies that earnings persist across generations (i.e.  $IGE > 0$ ) as a result of two main 'transmission channels':

- (i) Higher-earning parents invest more in their child's human capital, which increases income in the next generation:  $\gamma_t \vartheta > 0$ .
- (ii) Higher-earning parents have greater income-enhancing endowments, which are transmitted to the next generation through cultural influences and genetics:  $h > 0$ .

The strength of channel (i) will depend on the effectiveness of parental investments in producing human capital ( $\vartheta$ ) and on the returns to human capital in the labour market ( $\gamma_t$ ), while the strength of (ii) will be determined by the degree of heritability ( $h$ ) of endowed attributes.

It is important to note that the rationalization of the IGE in terms of these two intuitive transmission channels can be derived under a different set of model assumptions. For example, Becker and Tomes (1986) assume that the parent can borrow against their child's future income in order to finance human capital investments. In the presence of credit constraints, low-income parents face a higher cost of borrowing and this introduces a non-mechanical link between the income of the parent and that of the child. That is, when the ability to secure credit depends on  $Y_{t-1}$ , richer parents will invest more in their children's human capital.<sup>2</sup> In summary, basic models of intergenerational mobility predict that the intergenerational earnings elasticity will reflect both

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<sup>1</sup> With intercept  $\mu^* = \mu + \gamma_t \vartheta \ln \left\{ \frac{\alpha \gamma_t \vartheta}{1 - \alpha(1 - \gamma_t \vartheta)} \right\}$ .

<sup>2</sup> This is not the case if one assumes perfect capital markets, which allows all parents to make the right investment decision independently of their income. In this scenario, the transmission of income across generations would depend solely on the extent to which endowments are inheritable ( $h$ ).

the degree of heritability in endowments and the higher investments in human capital by high-income parents. This is a key result of the standard theory, and we will discuss its relevance for developing countries in more detail below.

It is also useful to note that the heritable endowments in the basic model can be separated into two types (see Corak and Piraino 2016; Mulligan 1997, 1999). The first type are traits (or advantages) that parents can transmit to their children without changing the expected marginal returns to human capital investment. These could be endowments that only come into play in the second period of the intergenerational model, once parental investment is already determined (e.g. a lottery won by parents later in the child's life). A second type of inherited attribute can instead alter the effectiveness of the human capital investment and/or its returns. These endowments have an additional effect on the child's earnings by changing the efficient level of their human capital. An example of such factors may be a genetically or culturally transmitted trait that enhances the child's ability to learn. Another example, provided in Magruder (2010), is parental networks changing the returns to human capital by increasing the number of potential job offers for a given education level. Magruder shows how this type of inherited endowment has a multiplying effect on the transmission of economic status, by amplifying the other channels of persistence. Similarly, Mulligan (1997) discusses a more general model of economic persistence that incorporates the two types of heritable endowment, as well as credit constraints, and shows that the degree of intergenerational income resemblance will depend on the interplay between the various sources of persistence, such as the importance of borrowing constraints, the correlation between the two dimensions of endowment, the size of the direct effect of inherited attributes, and the degree of heritability of endowments.

### **3 Determinants of social (im)mobility in developing countries**

The workhorse theoretical framework reviewed in the previous section has proven very useful for rationalizing empirical estimates of intergenerational income mobility around the world. However, most of the existing applied literature focuses on high-income countries, with a particular emphasis on the United States. While the key drivers in the standard theory of intergenerational mobility—i.e. parental investment in human capital and inherited family attributes—can also help the interpretation of the empirical evidence from low- and middle-income countries, it is important to recognize that not all insights apply to all economies, or at least not in the same way. The aim of this section is to highlight some of the barriers to social mobility that either have received less attention in the existing literature or may be of higher relevance to the majority of the world's population, due to the presence of institutions and market frictions that are more commonly observed in developing-country contexts. In particular, I will focus on (i) labour market segmentation, (ii) credit and risk market failures, and (iii) information frictions. There are, of course, other important drivers of social mobility in the developing world not discussed here, such as the determinants and returns to human capital acquisition, group discrimination, family structures and formation, and community-level effects. Fortunately, some of these issues are well covered in recent WIDER working papers (see Behrman 2019; Funjika and Gisselquist, forthcoming; Mani and Riley 2019).

#### **3.1 Segmented labour markets**

Segmentation is often thought of as a key characteristic of labour markets in developing countries (Fields 2011). This refers to the empirical observation that different parts of the market appear to operate in appreciably distinct ways. Typical examples are the documented differences between the formal and informal sectors, or between rural and urban areas. Segmentation does not imply

complete separation. In fact, a defining feature of segmented markets is the existence of various links (actual or potential) across segments, such that the performance and characteristics of one sector affect the functioning of the others (and vice versa). For our purposes, it is important to ask whether the existence of qualitative differences between labour market segments has implications for the level of social mobility in developing countries.

We can simplify the discussion by focusing on just two sectors—i.e. dualistic markets. The starting point of several theoretical models of dualistic markets in development economics is the distinction between primary and secondary sector jobs. ‘Primary sector jobs’ generally refers to higher-pay positions in the formal sector, carrying some benefits and some level of job security, which are also more likely to be located in urban areas. Secondary sector jobs offer lower pay, are typically in the informal sector and rural areas, and have limited benefits and job security. In these models, workers of similar human capital and skills levels can earn significantly different wages depending on which sector they find employment in (Fields 1980; Lewis 1954).

This characterization of segmented labour markets can have implications in terms of the intergenerational mobility framework outlined in the previous section. Standard models of mobility implicitly assume a unitary labour market, where skills are equally rewarded across sectors. This assumption is less realistic in the context of developing countries. Moreover, it is plausible to expect that the capacity to access different segments of the market is itself correlated across generations, which creates an additional channel of earnings transmission from parent to child. This applies to segmentation across sectors (agriculture vs industry), locations (urban vs urban), and occupations (formal vs informal). The key distinction here is in the underlying driver of the intergenerational earnings association. That is, do children of low-income (high-income) parents end up in low-paying (high-paying) jobs as a result of lower (higher) productive endowments and human capital, as in the standard models, or are they destined to remain in the same segment of the labour market as their parents because of barriers to mobility across sectors?

Mobility across segments of the labour market in developing countries is hindered by a number of factors, ranging from labour market institutions and regulations (e.g. minimum wages, unions), to geographic hurdles that increase migration costs, to lack of appropriate personal connections that may facilitate transitions into high-paying jobs. It is plausible to assume that many of the obstacles preventing transition from ‘bad’ to ‘good’ jobs are partly inheritable. For example, a large fraction of low-income parents in developing countries are employed in agriculture or live in remote areas that do not offer a wide variety of employment options. While residential location is clearly correlated across generations, some individuals are able to migrate. However, evidence from the literature in developing regions shows that it may be especially difficult for young adults born in the poorest parts of rural areas to look for work in and relocate to areas of higher employment and wages. As an example, Ardington et al. (2009) provide evidence of significant intergenerational effects arising from the arrival of a stable source of income in rural South Africa. They show that when an older member of the household becomes eligible for a state pension, there is an increase in the out-migration of prime-age individuals within the household. That is, the additional income in the family relaxes the barrier to mobility for the rural poor.

Beyond the heritability of residential location, children also inherit connections that can lead them to an occupation in the same sector as their parents. Magruder (2010) finds evidence of a significant role for network-based intergenerational correlations in South Africa. He notes that when intergenerational networks are important, they result in a reallocation of jobs among young adults according to connections. Since these parental connections are not perfectly correlated with ability, this mechanism is both inefficient and inequitable. This is because some high-ability individuals will find themselves confined to low-productivity and low-wage jobs due to a lack of valuable networks, while connected low-ability workers will be employed in the primary sector. To the



extent that there are important differences in pay levels across sectors, this will contribute to lower intergenerational mobility.

Relatedly, whether a young adult can receive ‘a little help’ in obtaining a first job in the formal vs the informal sector is of high relevance in many developing countries. The wage premium of working in the formal sector has been estimated in several studies to be positive and significant. Gong and Van Soest (2002) and Heintz and Posel (2008) find evidence of wage differentials in urban Mexico and South Africa, respectively. The South African study also shows that segmentation is evident not only between the formal and informal sectors in the labour market but also within the formal sector. This finding is consistent with evidence from Côte d’Ivoire (Günther and Launov 2012) and Egypt (Radchenko 2014). While some of these earnings differentials may reflect differences in skills, the wage gap cannot typically be fully explained by observable factors.

In summary, the existing empirical evidence on the qualitative differences in employment and wage conditions across different sectors of developing countries’ labour markets suggests an additional type of endowed attribute that can be passed on across generations. ‘Inheriting’ a job in the same sector as your parent can sometime only happen after human capital investments are completed. This would have an additive effect on the IGE. At the same time, the expectation of obtaining help in getting a job in a certain sector may alter the returns to human capital, which will affect parental incentives to invest in the child’s education. As discussed in Section 2, this may have a multiplying effect on the transmission of economic status, by amplifying the role of the other drivers of intergenerational inequality.

### **3.2 Imperfect credit and insurance markets**

#### *Credit constraints*

While there are several plausible mechanisms that could account for the finding of significant intergenerational association in incomes (Bowles and Gintis 2002), credit market imperfections and human capital acquisition have received the greatest attention (e.g. Grawe 2004; Mazumder 2005; Mulligan 1997). In the Becker-Tomes framework, if credit markets are perfect, all parents are able to borrow sufficient funds to invest the optimal amount in their offspring’s human capital (depending on ability level). In the presence of borrowing constraints, however, some parents are unable to gain access to credit and the optimal amount of human capital investment will not be realized. As a result, there will be a higher degree of intergenerational income persistence for families with high-ability children but insufficient credit. Allowing for systematic variation in the ability to secure credit thus creates a pathway of intergenerational persistence in the form of higher human capital investment by richer parents.

Producing credible empirical evidence on this theoretical prediction is not straightforward. One of the key problems is the difficulty of knowing unambiguously which households are truly borrowing-constrained. In order to identify constrained households, applied researchers have resorted to different forms of indirect evidence. One approach has focused on testing for a concave pattern in the intergenerational transmission of income. If low-income families are most likely to be credit-constrained, the degree of economic persistence across generations should be higher at the lower end of the distribution and should decrease with parental income. Based on this conjecture, a number of studies have investigated non-linear patterns in the intergenerational earnings equation (see Grawe and Mulligan 2002 for a review). Note, however, that in the human capital model, non-linear patterns arise as long as poor parents with high-ability children do not have sufficient funds to invest in their children’s education. Corak and Heisz (1999) and Han and Mulligan (2001) suggest that these constrained households are more likely to be found at the *middle*

of the income distribution. If the child's ability is correlated to parental income, credit market imperfections may not create distortions in the optimal amount of human capital for poor families. As the ability level increases with parental income, middle-income families would be more susceptible to credit constraints than both poor and rich families. Grawe (2004) further argues that the correlation of offspring's ability with parental income makes the presence of credit constraints compatible with any functional form. He concludes that non-linearities cannot form the basis of a test for credit constraints without specifying which families are presumed to be constrained.

A different set of empirical studies splits the sample of households into two groups by the likelihood of binding credit constraints. The logic behind this approach is that the group that is more likely to be constrained should experience more intergenerational income persistence. Mulligan (1997) draws an intergenerational sample in the United States and uses special information on inheritances to distinguish between financially constrained and unconstrained families. He estimates two separate intergenerational earnings regressions and finds no significant differences in the inertia parameter between the two groups. Gaviria (2002) partitions a sample of US fathers and children into 'rich' and 'poor' families and finds instead evidence of greater intergenerational earnings persistence for the credit-constrained group (i.e. the poor). Mazumder (2005) adds further empirical evidence to the debate by using a larger US administrative data set. He argues that the level of net worth can measure the ability of parents to borrow against their current wealth. Comparing individuals in the top quartile of net worth with those in the bottom quartile, he obtains significant differences in the persistence parameters. Clearly, the evidence from these US studies shows that the proxies used to identify credit-constrained households have a crucial impact on the empirical results.

The development economics literature on the role of access to credit and liquidity in reducing poverty provides a more consistent set of results. Burgess and Pande (2005) take advantage of a natural experiment in India to identify the effects of a large state-led bank branch expansion into rural locations with no banks. They find that banking expansion significantly reduced rural poverty, and that credit disbursement by banks in rural areas was a mediating factor. A related (but distinct) strand of studies suggest that targeted transfers to the poor in developing countries, such as conditional cash transfers, can have positive effects on a variety of outcomes in the short term, by allowing welfare-enhancing investments (Behrman et al. 2011; Molina Millán et al. 2016). Some studies also find evidence of long-term multiplier effects (Barrett and Carter 2013), suggesting that policies removing barriers to investments, such as through improved access to credit, can have a larger role in enhancing the upward mobility of the poor living in developing countries. These findings are consistent with an established theoretical literature identifying the different mechanisms through which access to credit can allow individuals to modify their production and employment choices and to improve their economic status. For example, Banerjee and Newman (1993) offer an occupational choice model wherein individuals with low initial wealth cannot access occupations that require significant levels of human capital investment, due to imperfect capital markets.

There is also increasing empirical evidence in developing countries on the existence of binding credit constraints for educational investments. Solis (2017) presents findings on the effects of a college loan programme in Chile and finds that credit access leads to a large increase in enrolment. Importantly, access to credit closes the gap in enrolment and attainment by income status, which has clear implications for intergenerational mobility. Similarly, Kaufmann (2014) shows that lower-

income individuals in Mexico are responsive to changes in the direct costs of education, which is consistent with binding credit constraints.<sup>3</sup>

Taken together, these different strands of literature suggest that credit constraints may play a larger role in developing countries. If credit markets are more likely to fail in these contexts, the chances of upward mobility for children at the bottom of the income distribution may be lower than in rich countries. For example, Grawe and Mulligan (2002) note that societies with well-functioning credit markets should have fewer constrained families and, consequently, display higher levels of overall intergenerational income mobility. Maoz and Moav (1999) argue that less-efficient credit markets may partially explain why intergenerational earnings mobility is higher in more-developed economies. In their model, economic growth influences mobility via its effect on the incentives to acquire education and on relaxing liquidity constraints. As a result, when countries grow, mobility increases the correlation between ability and education. This intuition has direct policy relevance. If borrowing constraints are an important determinant of intergenerational mobility, easing credit market access for targeted groups would have desirable effects in terms of both equity and efficiency.

### *Risk and uncertainty*

Significant earnings volatility and imperfect insurance against shocks are important determinants of households' budget and expenditure decisions in developing countries—much more so than in high-income settings. Higher uncertainty and income volatility are partly related to larger agricultural sectors and the risks deriving from farm production (e.g. seasonality, weather shocks, etc.). Larger informal sectors and fewer labour market regulations also contribute to this high-risk environment. The combination of low pay, unpredictable income, and underdeveloped insurance tools leads individuals to manage their resources more carefully, which may result in suboptimal risk-taking.

In terms of the standard theory of intergenerational mobility, the uncertainty in current and future earnings will affect parental investments in the two-period model discussed above. With imperfect risk markets, uncertainty in the child's future earnings may lead risk-averse parents to underinvest in their child's human capital. In addition, income volatility in the first period and imperfect insurance markets may exacerbate the effects of credit constraints on intergenerational mobility. In particular, the amount invested in children can be suboptimal even if the parent is not presently constrained but has a positive probability of being constrained in the future (Heckman and Mosso 2014). To the extent that volatility and uncertainty are higher in the earlier periods of a parent's working life, this may be particularly binding for early-education investment choices. In the presence of dynamic complementarities in skill accumulation, this early-stage uncertainty would also render later parental investments less effective. Since poorer households tend to be both more risk adverse (Binswanger 1980) and more likely to be constrained, these effects imply a greater role for parental income in determining the children's human capital and hence their future earnings.

There is no empirical evidence on the contribution of imperfect insurance markets and income uncertainty in explaining intergenerational mobility. Given the higher incidence of these issues in developing countries, it is plausible to expect that this particular driver of intergenerational persistence will be of great relevance. The literature on poverty traps in development economics provides evidence in support of this conjecture. Barrett and Carter (2013) review the ample evidence from development economics showing that risk influences the decisions of poor

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<sup>3</sup> Note that, in contrast, the evidence in support of binding credit constraints for educational investments in high-income countries is more mixed (Carneiro and Heckman 2002; Restuccia and Urrutia 2004).

individuals and that shocks can have long-term consequences. Even one-off events can push poor households into a poverty trap (Lybbert et al. 2013). This, coupled with lack of insurance and credit, results in individuals opting for low-return, low-risk investments. The absence of formal insurance schemes and the insufficient protection offered by informal risk-sharing arrangements lead to a differential ability of households with different economic status to take on high-return investments, leading to poverty perpetuation (Dercon and Christiaensen 2011). In addition, the same factors driving suboptimal investment choices can imply an endogenous change in individual preferences. Uncertain future prospects, along with low asset levels, may lead poorer parents to shorten their time horizons and underestimate potential future gains. For example, Laajaj (2017) shows evidence on this type of behavioural poverty trap with respect to asset accumulation in rural Mozambique.

### 3.3 Information frictions

Do informational constraints contribute to higher social exclusion and lower social mobility in developing countries? To answer this question, I focus on two specific informational barriers: (i) asymmetric information in the labour market and (ii) parental beliefs about the returns to education.

#### *Labour market information frictions*

Information frictions are prevalent in developing countries' labour markets, especially in the market for low-skill and entry-level jobs. In these markets, job-seekers often have limited work experience and lack educational degrees to signal skills. For those who acquire education, the quality of learning is low on average and highly variable, which limits the use of education credentials to signal productivity. This leaves firms with limited or unreliable information with which to screen job applicants. Moreover, employers are less likely to invest in costly screening, as work relationships are often short term (Autor and Scarborough 2008). Also, relevant labour market information may be less available than in high-income countries because of spatial frictions, a much younger workforce with limited work experience, and less-widespread use of information technologies. To the extent that these information gaps make firms particularly uncertain about (or likely to underestimate to a greater extent) the productivity of disadvantaged job-seekers, information frictions will contribute to social exclusion and limited upward mobility.

Hiring employers can partially reduce these asymmetries by relying on social networks and the existing workforce to fill vacancies. For example, current employees can help to overcome the problem of asymmetric information and create better employment matches, as they know both the firm and the people in their network. Moreover, firms may use referrals from current workers to reduce moral hazard problems (Heath 2018). However, finding employment through personal connections may limit the pool of potential candidates and decrease match quality (Loury 2006). For instance, current employees may have personal interests in referring family and friends that conflict with the interests of the firm (Beaman and Magruder 2012; Fafchamps and Moradi 2015). Informal referral systems may thus exacerbate inequity, as they disadvantage less-connected groups (Montgomery 1991).

Imperfect information affects not only the selection of applicants but also the wages of employed workers. In many contexts, employers can only partially observe work effort and productivity. Foster and Rosenzweig (1994) use large data sets from rural areas in Asia to investigate the extent to which employers have imperfect information on the productivity of heterogeneous workers. They find considerable variation in productivity that is not explained by characteristics observable by employers. While employers appear to learn about worker productivity over time, this would exacerbate wage inequality between workers with varying degrees of labour market

attachment/experience. They also find evidence that information frictions lead employers to engage in statistical discrimination against women. Statistical discrimination occurs when managers use group membership as a proxy for individual productivity. Individuals with identical abilities may thus receive different wages on account of the average productivity of the group they belong to (e.g. gender, race, caste).

Pervasive gaps in labour market information may thus decrease social mobility in developing countries. This intuition is corroborated by a series of recent studies on how various types of labour market frictions in different African countries can result in worker misallocation and higher inequity. Abel et al. (2019) show that hiring firms can reduce information asymmetries for young South African job-seekers through referrals from previous employers. Former employers are shown to have valuable information about workers' skills that would otherwise be unobservable in the hiring process. Importantly, the analysis shows that the effect may be larger for job applicants at an initial disadvantage. However, these authors also find that this practice is largely absent in the low-skill market analysed, partly because job-seekers underestimated its effectiveness. Recent evidence from two experimental studies on the role of information frictions in Ethiopia and Uganda find consistent results (Abebe et al. 2018; Bassi and Nansamba 2018). In particular, these studies show that programmes to help job-seekers certify their skills can have positive effects on employment outcomes. These types of intervention are shown to be particularly useful for those with the least education and experience, suggesting that information frictions disproportionately affect people from lower socioeconomic backgrounds.

#### *Beliefs about the returns to education*

Human capital investment decisions by disadvantaged families are not only a function of the availability of credit lines or risk insurance. Under-investment in the human capital of children may also result from biased beliefs. Simple human capital investment models predict that individuals are more likely to acquire education when the expected returns to the investment are higher. An accurate assessment of the returns to additional schooling is unlikely for most parents, as decisions are typically made on the basis of limited or imperfect information. As noted by Berhman (1999), most of the empirical literature on such investments in development countries does not integrate this possibility due to the difficulty in measuring such expectations. However, this possibility may be of particular importance in the developing world, where educational attainment remains lower than in high-income countries, despite higher estimated returns.

It is possible that parents in low-income countries are less well informed about the returns to education. Reliable information on education returns may not be available because of data constraints. Even when information is available, the findings may not be as widely disseminated by public and/or private organizations. In addition, schools may be less likely to have a counsellor who provides information about future career paths and earnings. Parents can reduce this information gap by relying on what they can observe in their proximate environment. The accuracy of the information people can gather would then depend on the 'quality' of the sources people have access to. Segmentation and segregation imply that people from different socioeconomic backgrounds will form different expectations about the returns to schooling. The extent to which the bias on the expected effectiveness of schooling investments varies by socioeconomic status will determine how the child's human capital will respond to inherited disadvantage via this additional channel of influence.

Jensen (2010) investigated families' perceptions of the returns to schooling in the Dominican Republic, finding that students significantly underestimate the returns to secondary education. Providing them with more-accurate information about the returns to education led to the completion of additional years of schooling. The study also showed that while the intervention

had a similar impact on the perceived returns for the poorest and the least poor households in the sample, there was no significant increase in schooling among the poorest households. This suggests that even if families are aware of the returns to education, schooling costs and credit constraints may still prevent them from attending. This suggests a degree of complementarity in the barriers to upward mobility as discussed in Section 2.

#### **4 Concluding remarks**

The discussion in the previous section helps us to identify some promising avenues for future research on intergenerational mobility in developing countries.

The existence of segmented labour markets points to analyses of the variation in economic mobility across spatial, sectoral, and occupational segments. This could provide valuable insights on whether segmentation is indeed a key driver of intergenerational persistence in developing countries. The recent increase in the number of empirical studies on the ‘geography of mobility’ in high-income countries provides an example of approaches that could generate credible evidence on this important question. Of course, such efforts could be coupled with more narrowly focused (and perhaps less-descriptive) investigations of the various types of barriers to sectoral, geographical, and occupational mobility faced by different individuals in the population.

As noted above, testing for the importance of credit constraints as a driver of intergenerational persistence, relative to other impediments to mobility, is particularly difficult. If anything is to be learnt from studies in high-income countries, credit constraints do not appear to be especially important. Given the inconclusive nature of results on credit constraints as a barrier to mobility, as well as the underdevelopment of capital markets in many developing countries, it is fair to say that there are ample opportunities for innovative research in this area. In particular, credible empirical tests must take into account the specific features of capital markets in the developing world, such as the widespread lack of collateral among poor households, the limited market penetration in rural areas, and the role of small credit institutions.

Similarly, there is limited or no empirical evidence on the contribution of imperfect insurance markets and income uncertainty in explaining intergenerational mobility. Given the high relevance of these factors in developing countries, this offers a clear direction for future investigations. However, risk preferences are often not measured in national surveys, and identifying households that can be assumed to benefit from different types of insurance is not straightforward. Similarly to the empirical approaches in the credit constraints literature, future studies in this direction may have to design forms of ‘indirect’ evidence for this channel of intergenerational income transmission.

Our discussion on information frictions in the labour market also leads to ideas for future research in developing countries. We have shown that reducing information barriers in job search can contribute to levelling the playing field for job applicants at an initial disadvantage. This may provide a rationale for governments to facilitate information exchange. In general, this type of labour market policy could improve social mobility by increasing the labour market integration of disadvantaged groups. This could also help to reduce the barriers to mobility across segmented labour markets. Policies that promote market integration can thus diminish the room for practices reproducing segmentation and inequality, such as network effects, nepotism, and discrimination.

Finally, we have shown that biased expectations about the returns to education can also lead to a differential outcome for disadvantaged students. Families make decisions on educational

investments based on what they perceive to be the benefits to human capital. These perceptions may be inaccurate, particularly among low-income parents, causing people to under-invest in education. Economists and psychologists have made substantial progress in understanding how people of varying socioeconomic backgrounds form expectations and make decisions. Poorer families may be more likely to form biased beliefs because of limited access to accurate information from personal experience or from the fewer more highly educated acquaintances who can serve as examples. More generally, different experiences and exposure to different social patterns can have long-lasting effects on judgement and behaviour by shaping the way in which information is interpreted. A promising direction for future research is to test the relative importance of informational frictions compared with credit and risk market failures. This has high policy relevance, as it may be possible to effectively influence information asymmetries and biased beliefs at a fraction of the cost of interventions offering financial assistance.

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