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What We Know (and Want to Know) About Earnings Mobility in Developing Countries

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What We Know (and Want to Know) About Earnings Mobility in Developing Countries

Abstract

[Excerpt] Some developing countries have experienced rapid economic growth, some slow economic growth, some no growth at all, and some economic decline. The traditional way of gauging the distributional consequences of economic growth, if in fact there was economic growth, is to use data from comparable cross sections to calculate various measures of (relative) inequality and (absolute) poverty. The very large literature on inequality and poverty will not be reviewed here.

A newer approach in the development literature is to study the distributional consequences of economic growth (or non-growth) by using data for the same recipient units for two or more points in time to analyze changes in total income (“income mobility”) and in income from paid employment and self-employment (“earnings mobility”). Such data, called panel data or longitudinal data, may involve baseline interviews and one or more subsequent reinterviews or alternatively a single interview with retrospective questions about previous income or earnings. Examples of panels with reinterviews are South Africa’s KwaZulu-Natal Income Dynamics Study, the Indonesia Family Life Study, and Chile’s CASEN panel. A prominent panel based on retrospective data is the China Household Income Project. The literature reviewed in this paper draws on both kinds of panel data.

Keywords

mobility, earnings, income, development

Comments

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What We Know (and Want to Know) About Earnings Mobility in Developing Countries

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April, 2011

Introduction

Some developing countries have experienced rapid economic growth, some slow economic growth, some no growth at all, and some economic decline.¹ The traditional way of gauging the distributional consequences of economic growth, if in fact there was economic growth, is to use data from comparable cross sections to calculate various measures of (relative) inequality and (absolute) poverty. The very large literature on inequality and poverty will not be reviewed here.²

A newer approach in the development literature is to study the distributional consequences of economic growth (or non-growth) by using data for the same recipient units for two or more points in time to analyze changes in total income (“income mobility”) and in income from paid employment and self-employment (“earnings mobility”). Such data, called panel data or longitudinal data, may involve baseline interviews and one or more subsequent reinterviews or alternatively a single interview with retrospective questions about previous income or earnings. Examples of panels with reinterviews are South Africa’s KwaZulu-Natal Income Dynamics Study, the Indonesia Family Life Study, and Chile’s CASEN panel. A prominent panel based on retrospective data is the China Household Income Project. The literature reviewed in this paper draws on both kinds of panel data.

¹ Growth rates are available, for example, in Table 1 of every World Bank *World Development Report*.

² Two excellent resources on poverty and inequality are <http://www.worldbank.org/poverty> and <http://www.wider.unu.edu/wiid/wiid.htm>.

This paper reviews the previous empirical literature on the following questions for low- and middle-income countries:

- How much earnings mobility is there?
- To what extent do the mobility patterns in countries approximate complete persistence or perfect mobility?
- Is there evidence of cumulative advantage and poverty traps?
- Who benefits the most from the growth process, and how much do they benefit? Who is left behind or made more vulnerable?
- Who is hurt when economic decline takes place and by how much (and who can withstand or even see income gains in such environments)?
- What are the forces behind these changes and behind the experiences of different groups of individuals?

The review does not cover Nicaragua, the Philippines, and Albania, for which new results are presented elsewhere.

I report the highlights and do not try to find and cite *all* of the studies of developing countries' income and earnings mobility. The review excludes studies that use pseudo-panels and those that use data from one or a very small number of villages, cities, or occupational groups.^{3, 4}

Before proceeding, it bears mention that two methodological issues pervade the literature: measurement error and attrition bias. In the great majority of cases, the available data do not permit the analyst to address these issues. Accordingly, the reader is cautioned to interpret the evidence presented with a certain degree of caution.

The first lesson coming out of studies of economic growth and earnings mobility is that not everybody gains when economic growth takes place and not everybody loses when economic decline takes place. Figures 1 and 2 on the next pages display the distribution of earnings changes during Tanzania's 2004-2006 economic growth and Argentina's 2001-2002 economic crisis. We see that the majority of earnings changes were to the right (left) of the zero point, but a sizeable number were positive (negative). Similarly, in a study of income changes during a time of sharp economic decline in Côte d'Ivoire, it was found that about 30% of households moved up from "extreme poor" to "mid-poor" or from "mid-poor" to "non-poor." In the words of the study's authors (Grootaert and Kanbur, 1996), "the general message is loud and clear: the lucky 'few' were not so few!" (Exclamation point in the original.)

³ Pseudo-panel studies are those that use cross sectional data to look at similar people but not the same individuals – for example, those of a particular gender and education level who are in a certain age group in the initial year and who are t years older t years later. Examples are the studies by Antman and McKenzie (2007) for Mexico, Navarro (2006) for Argentina, and Calónico (2006) for Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Uruguay, and Venezuela.

⁴ Examples of mobility studies based on limited geographic coverage are the studies of single villages such as Palanpur, India (Drèze, Lanjouw, and Stern, 1992) and single cities such as Lima, Peru (Glewwe and Hall, 1998).

Figure 1
Tanzania:
Distribution of Earnings Changes, 2004-2006

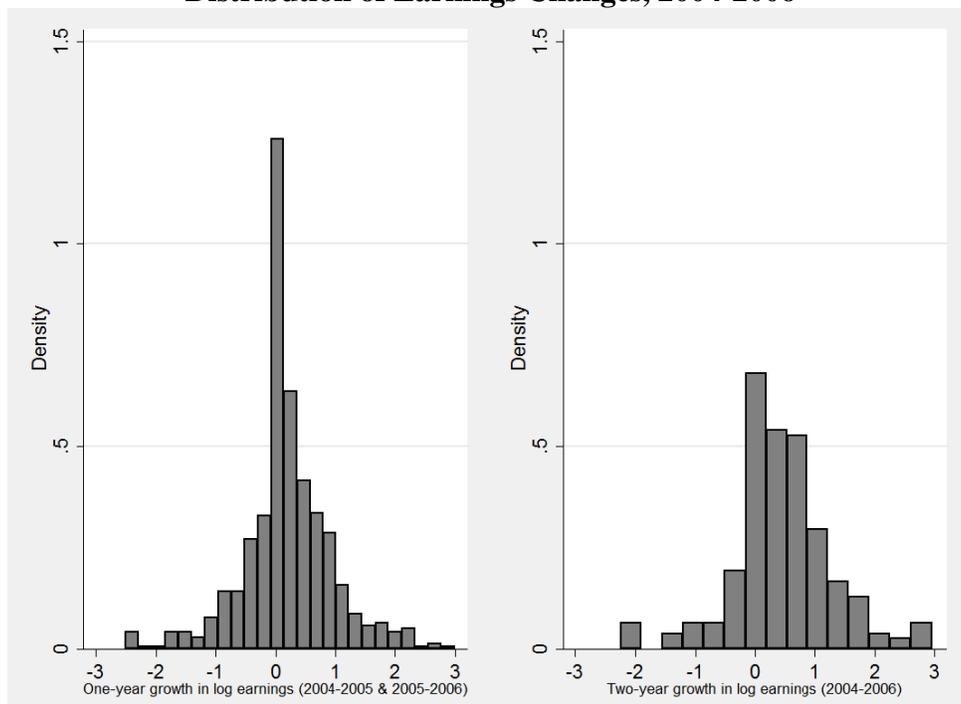
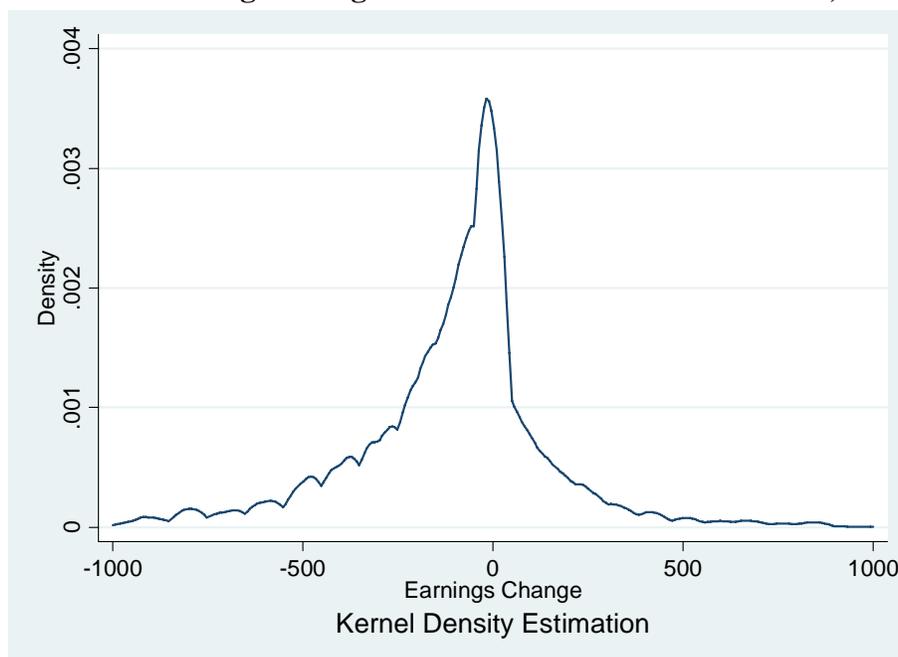


Figure 2
Argentina:
Distribution of Earnings Changes Between -1000 and +1000 Pesos, 2001-2002



Source: Fields and Sánchez Puerta (2010).

Macro Mobility and Earnings Dynamics

The literature distinguishes different possible mobility patterns: zero mobility, complete mobility, low earnings traps, and cumulative advantage. We might ask: as an empirical matter, which if any of these is an accurate characterization of earnings mobility in developing countries? Information is presented in what follows for six countries: Argentina, Chile, Mexico, China, South Africa, and Ethiopia.⁵

Starting with Argentina, in a country at that level of economic development, the majority of workers are wage and salaried employees, and so it is possible to examine changes in individual earnings for the majority of workers in the Argentine labor force. Table 1 displays a quintile transition matrix – that is, for workers who started in each of the five base-year quintiles, what proportion were in which quintile at a later point in time. The data show that 52.1% of workers changed earnings quintiles between 2001 and 2002, with more than half of those who started in the lowest earnings quintile moving up to a higher quintile and about one-third of those who started in the highest earnings quintile moving down to a lower quintile.⁶

Table 1
Urban Argentina: Earnings Quintile Transition Matrix, 2001-2002.

	Quintile in 2002					
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Quintile in 2001						
Quintile 1	48.7%	25.9%	12.0%	6.1%	7.3%	100%
Quintile 2	22.7	37.8	32.8	5.9	0.7	100%
Quintile 3	16.2	9.1	41.3	28.4	5.0	100%
Quintile 4	14.5	2.9	13.0	47.8	21.9	100%
Quintile 5	13.5	1.7	4.7	12.6	67.6	100%

Source: Fields and Sánchez Puerta (2010).

Table 2 displays a quintile transition matrix for urban China. The income variable used is total income, of which the great majority is labor earnings. The period in question, 1990-1995, was a time of rapid economic growth. As in Argentina, and indeed as in many other countries, the cell with the greatest persistence is the 5-5 cell – that is, those who started in the richest income quintile were most likely to remain in that quintile compared

⁵ Many mobility studies present macro mobility results only. Examples are the studies by Wodon (2001) for Argentina and Mexico and by Nee (1994) and Wang (2005) for China.

⁶ What can also be discerned in the data for Argentina is that sizeable percentages of workers in all quintiles in 2001 ended up in the lowest-earnings quintile in 2002. This is not at all typical of what one usually finds. It reflects the large movements of workers into unemployment and very low earnings caused by the more than 13% drop in real GDP between 2001 and 2002.

with those who started in any other income quintile. And, as is also typical, the cell with the second greatest persistence is the 1-1 cell – that is, those who started in the lowest income quintile were the next most likely to remain in the same quintile.

Table 2
Urban China: Income Quintile Transition Matrix, 1990-1995.

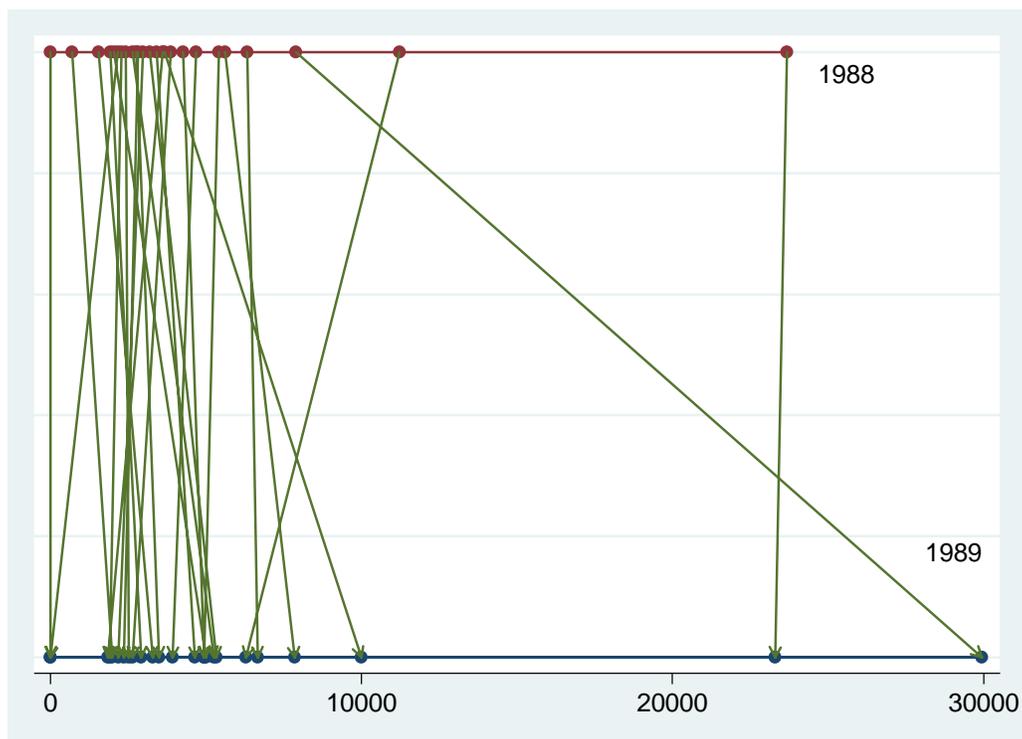
	Quintile in 1995					Total
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	
Quintile in 1990						
Quintile 1	43.9%	21.9%	17.7%	11.5%	4.9%	100%
Quintile 2	27.7	26.0	20.3	16.1	9.9	100%
Quintile 3	18.7	24.2	22.7	20.8	13.6	100%
Quintile 4	7.6	20.6	24.9	24.9	22.0	100%
Quintile 5	2.1	7.3	14.4	26.6	49.6	100%

Source: Khor and Pencavel (2006).

What do transition matrices such as these tell us about complete persistence and perfect mobility in reality? If earnings in Argentina and China had been completely persistent, all workers would have remained in the same earnings quintile. The Argentine and Chinese realities are very far from that characterization. On the other hand, if earnings had been perfectly mobile, 20% of those who started in a given quintile would have ended up in each of the five final-year quintiles. The Argentine and Chinese realities are very far from that characterization as well. Argentina and China typify what is found in such transition matrices: countries are roughly half-way between complete persistence and perfect mobility.

The extent of earnings mobility can be viewed in another way: by following a smaller number of individuals through the earnings distribution over time. For Mexico, we selected those individuals at the fifth, twenty-fifth, fiftieth, seventy-fifth, and ninety-fifth percentile of each of the five earnings quintiles in the base year (1998) and followed them to the next year (1999). (In Mexico, the 1998-1999 period was one of economic growth and rising inequality.) The results are displayed in Figure 3. We see several things: i) The initially-high earners tended to remain high earners. ii) The earnings changes among high earners were quite disparate. iii) The low earners tended to remain low earners. iv) Many crossings took place within the middle of the earnings distribution.

Figure 3
Mexico: Initial and Final Earnings for Twenty-Five Individuals



Source: Duval-Hernandez, Fields, and Sanchez-Puerta (2008).

Another way of looking at earnings mobility is by drawing a low-earnings line and looking at transitions and non-transitions for earners who started above and below that line. Table 3 displays such a transition matrix for South Africa, where now the four cells of the matrix sum to 100%. What we see when just two categories are used (low earnings and not low earnings) is that the great majority of those who started below the low earnings line, 549 out of the original 678 (81%), were still observed to be below the low earnings line five years later. Conversely, 128 of the 205 who started above the low earnings line (62%) were still above the low earnings line five years later. South Africa too is far from either complete persistence or perfect mobility. South Africa exhibits a low earnings *tendency* but not a low earnings *trap*.

Table 3
South Africa: Low Earner Transition Matrix, 1993-1998

Category in 1993	Category in 1998		Total
	Below low earnings line	Above low earnings line	
Below low earnings line	549 (62.2%)	129 (14.6%)	678 (76.8%)
Above low earnings line	77 (8.7%)	128 (14.5%)	205 (23.2%)
Total	626 (100%)	257 (29.1%)	883 (100%)

Source: Cichello et al. (2005).

Consider this evidence in light of the hypothesis of cumulative advantage. In Argentina, China, Mexico, and South Africa, those individuals or households who start out advantaged are disproportionately likely to be advantaged later. Here too, success later in life is not *guaranteed* to the initially advantaged, but the initially advantaged have a much higher *likelihood* of being advantaged than do the initially disadvantaged.

Before closing this section, it bears mention that in addition to the literature on changes in *individual labor earnings* which so far has been considered here, there is also a large literature on changes in *household poverty*. Poverty is gauged by comparing the total consumption or income of the household to a poverty line befitting their household size and composition. There is a large empirical literature on poverty traps in developing countries.⁷ To give a flavor of what this literature shows, look at Tables 4 and 5, which present a poverty transition matrix for one of the richest developing countries, Chile, and one of the poorest, rural Ethiopia.

In Chile, poverty is classified according to per capita autonomous income of the household. More households who started poor were found to be non-poor than poor after five years. At the same time, the overwhelming majority of households who started non-poor remained so. The poor in Chile are *not trapped*; what Chile has is a poverty *tendency*.

⁷ The poverty dynamics literature is reviewed in Baulch and Hoddinott (2000), Hulme (2003), Dercon and Shapiro (2007), and Chronic Poverty Research Centre (2008).

Table.4
Chile: Poverty Transition Matrix, 1996-2001

Category in 1996	Category in 2001		
	Poor	Non-poor	That row as % of total
Poor	43.6%	54.4%	20.2%
Non-poor	11.4%	88.6%	79.8%
That column as % of total	18.5%	81.7%	100%

Source: Neilson et al. (2008).

Turning now to Ethiopia, poverty is defined according to a low-consumption line for a household. In just one year, the number of changes would not be expected to be great, but still there are significant transitions. Of households that started poor, more than one-third were not classified as poor one year later (though in the context of an economy as poor as Ethiopia's, many of the non-poor are not living well). On the other side, more than one-quarter of the households that started non-poor were classified as poor one year later. These drops into poverty highlight the vulnerability of the great mass of Ethiopia's population.⁸

Table 5
Rural Ethiopia: Poverty Transition Matrix, 1994-1995

Category in 1994	Category in 1995		
	Poor	Non-poor	Total
Poor	24.8%	13.7%	
Non-poor	16.4%	45.1%	
			100%

Source: Dercon and Krishnan (2000).

In summary, the mobility literature reveals three patterns. First, the truth is in between complete persistence and perfect mobility; neither extreme is close to being correct. Second, a tendency is found for individuals who start as low earners and those households who start in poverty to remain so; however, low earnings and poverty are *tendencies, not traps*. And third, cumulative advantage is a *tendency, not a certainty*; starting in a favored position raises the likelihood of being in a favored position at a later time, but it does not guarantee it.

⁸ When the panel contains three or more interviews, the persistence of poverty and non-poverty can be examined. See Dercon and Shapiro (2007, Table 3.1) for such evidence from a number of developing countries.

Different Types of Micro Mobility Analysis

As noted above, micro mobility studies start by asking who has more economic mobility and who has less. Let Y_1 denote the reported value of the economic variable of interest in the initial year and let Y_2 denote the reported value of the economic variable of interest in the final year. Define “economic mobility” for income recipient i as $\Delta Y_{i,t} \equiv Y_{i,2} - Y_{i,1}$. Throughout the micro mobility literature, the dependent variable is invariably the change in the reported value of Y .

The economic variable of interest can be change in total income (“income mobility”), change in income from the labor market (“earnings mobility”), or change in some other economic variable such as wealth. The recipient units can be individuals or households. In studies of household income mobility, household income is typically adjusted for household size, either on a per capita basis or using equivalence scales. The recipient units’ changes can be measured as change in income in real currency units, change in log-income (real), or change in position (in quintiles, deciles, or centiles) within the income, earnings, or wealth distribution. The focus here will be on earnings change in real currency units, but studies of change in; total income will also be cited where relevant.

It is useful to separate out two types of micro mobility studies. Both examine such correlates of earnings change as initial earnings, gender, education, and geographic location. *Unconditional micro mobility studies* examine these correlates one variable at a time – for example, to determine who has more economic mobility, men or women or better-educated vs. less-educated workers. The purpose of these studies is explicitly *not* to hold other things equal; their purpose is to see who is doing better, period. On the other hand, *conditional micro mobility studies* gauge the effect of one correlate controlling for the role of others – for example, to determine whether men have more economic mobility than women after controlling for gender differences in education, geographic location, etc. Both sets of issues – identifying which are the important unconditional correlates of economic mobility and which are the important conditional correlates – are of interest and are taken up in turn in the following sections.

Unconditional Micro Mobility

In studies of unconditional earnings mobility (and other types of economic mobility as well), considerable attention has been paid to the question of how earnings changes relate to initial earnings. As above, letting Y_1 and Y_2 denote initial reported earnings and final reported earnings respectively and $\Delta Y_{i,t} \equiv Y_2 - Y_1$ denote the change in reported earnings from initial to final year, unconditional mobility studies typically run linear regressions of the form

$$\Delta Y_{i,t} \equiv Y_{i,2} - Y_{i,1} = \alpha + \beta Y_{i,t-1} + \varepsilon_{i,t}, \quad (1)$$

although non-parametric regressions have occasionally been estimated as well. The error term in (1) is usually assumed to be independent and identically distributed. This assumption is far from innocuous.⁹

Various theories have been brought to bear on the expected sign of β in these models.¹⁰ The theory of *cumulative advantage* maintains that for a variety of economic and political reasons, those who have the most to begin with are the ones likely to continue to gain advantage. Then there is the notion of *poverty traps*, according to which those who start out in poverty are likely to face serious disadvantages that make it hard for them to move up and out of poverty. A third factor is the phenomenon of *labor market twist*. This is the idea that due to skill-biased technological change in today's globalized world, the relative demand for skilled labor has outpaced the relative demand for unskilled labor, resulting in larger earnings gains for the skilled (who on average are high earners) than for the unskilled (who on average earn less). These three factors – cumulative advantage, poverty traps, and labor market twist – create an expectation that those households and individuals who experience the earnings gains over time will be the highest initial earners. On the other hand, the theory of *regression to the grand mean* leads one to expect that those with initially high earnings will do less well than those with initially low earnings.¹¹

Empirically, the studies of developing countries to date (reviewed below) produce a virtual consensus: unconditionally, with one major exception, those who gained the most over time have generally been those who reported the *lowest* incomes or earnings to begin with. This result is termed “unconditional convergence.”

Unconditional convergence comes in two flavors. The weaker form of unconditional convergence is that the largest *percentage* changes in income or earnings are experienced by those who have the lowest reported incomes or earnings to begin with. Such “weak unconditional convergence” has been reported in studies of income mobility in Indonesia, South Africa, and Venezuela (Fields et al., 2003a), in Tanzania (Quinn and Teal, 2008) and in China for the period 1991-1995 (Ying, Li, and Deng, 2006; Khor and Pencavel, 2006), of consumption mobility in Peru (Grimm, 2007), and of earnings mobility in South Africa (Cichello, et al., 2005). In China, though, a reversal is reported: whereas weak unconditional convergence appeared in the data for 1991-1995, weak unconditional *divergence* appeared for the period 1998-2002 (Ying, Li, and Deng, 2006). Why this reversal took place is clearly an important question for future work.

⁹ An important task yet to be carried out in the income and earnings mobility literature is to work out the full implications of a non-iid structure for ε_{it} in (1).

¹⁰ Citations to these theories appear in Fields et al. (2007).

¹¹ The theory of regression to the grand mean goes back more than a century to Galton, who formulated the theory in the context of body heights. Galton's ideas were put into an economic context by Zimmerman (1992) and Solon (1992). Following on this line of reasoning, it might be expected that those who have the highest incomes or earnings to start with would be the ones who are observed to gain the least when growth is positive and lose the most when growth is negative.

In addition to this finding about weak unconditional convergence, the literature offers an even stronger and perhaps surprising finding: that those with the lowest reported incomes or earnings to begin with have experienced the most positive or least negative changes *in dollars*. “Strong unconditional convergence” has appeared in studies of income mobility in Indonesia, South Africa, and Venezuela (Fields et al., 2003a) and of earnings mobility in Argentina, Mexico, and Venezuela (Fields et al., 2007) and South Africa (Cichello et al., 2005).

The results of the unconditional convergence studies just cited have not been accepted unquestioningly for good reason: the possible mismeasurement of income or earnings. In regressions of the type

$$\Delta Y_{i,t} \equiv Y_{i,2} - Y_{i,1} = \alpha + \beta Y_{i,t-1} + \varepsilon_{i,t}, \quad (1)$$

if Y_i is measured with error, the mismeasured variable appears both on the left hand side and on the right hand side of the regression, producing an attenuation bias which in this context means that apparent convergent mobility can be spurious rather than real.¹² A direct way of remedying the measurement error in survey data is to instead use administrative data such as employers’ reports to the tax authorities. Such a study has been conducted for the United States; Dragoset and Fields (2008) find unconditional convergence using both survey data and administrative data for the exact same respondents. I know of no data set that can be used to conduct such a study for a developing country.

In developing countries, where administrative data are lacking, analysts have tried to address the measurement error issue by replacing Y_i on the right hand side of (1) by a measure of predicted or longer term income or earnings, \hat{Y}_i . When regressions of the type

$$\Delta Y_{i,t} \equiv Y_{i,2} - Y_{i,1} = \alpha + \beta \hat{Y}_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

have been run, the results prove to be quite mixed. In the study of income mobility in Indonesia, South Africa, and Venezuela (Fields et al., 2003a), unconditional convergence was still found in South Africa, but unconditional divergence was found in Indonesia and no statistically significant pattern appeared in Venezuela. Each of these regressions was run for a single year only. Later, in a study of earnings mobility in Argentina, Mexico, and Venezuela (Fields et al., 2007), such regressions were run for many years in each country. In Argentina, the estimates of (2) produced convergent results in most years and insignificant results in others. In Mexico, the results were overwhelmingly insignificant. In Venezuela, the results were significantly convergent in two years, insignificant in two years, and significantly divergent in two years.

Note well what statistical insignificance means in the context of equation (2): the income or earnings changes in currency units were not significantly different for those in different parts of the income or earnings distribution. This may come as a surprise to those who infer from slowly-changing Lorenz curves and other measures of relative

¹² Whenever the right-hand-side variable is measured with error in a regression, an attenuation bias results (Deaton, 1997). However, the presence of the same mismeasured Y_i variable as a regressor on the right-hand-side and in $Y_2 - Y_1$ on the left-hand-side produces a further attenuation bias. See Bound, Brown, and Mathiowetz (2001) for details.

inequality that in times of economic growth those who gain the most dollars are those at the top of the income or earnings distribution.

Convergent mobility ties in with one aspect of macro mobility, namely, whether the mobility that takes place equalizes longer-term earnings relative to initial earnings (Fields, 2010). The idea that longer-term earnings are more equally distributed than earnings in any given year is an old one. For example, Milton Friedman (1962) wrote:

Consider two societies that have the same distribution of annual income. In one there is great mobility and change so that the position of particular families in the income hierarchy varies widely from year to year. In the other, there is great rigidity so that each family stays in the same position year after year. Clearly, in any meaningful sense, the second would be the more unequal society.

In a similar vein, Paul Krugman (1992) stated: "If income mobility were very high, the degree of inequality in any given year would be unimportant, because the distribution of lifetime income would be very even . . . An increase in income mobility tends to make the distribution of lifetime income more equal." The empirical studies that have investigated this issue for developing countries all confirm that mobility does in fact equalize longer-term incomes; see Wang (2005) on China and Duval Hernández, Fields, and Sánchez Puerta (2008) on Argentina and Mexico.¹³

Some micro mobility studies have investigated the relationship between income or earnings change on the one hand and variables other than initial income or earnings on the other. Of particular interest to this project is change in labor market status (whether employed or unemployed) and change in type of work performed (for example, formal or informal) or type of employment relationship (employer, wage employee, self-employed or household worker).

Numerous changes between labor market states are reported in various countries - among them, Ethiopia, Ghana, and Tanzania (Sandefur, Serneels, and Teal, 2006; Bigsten, Mengistae, and Shimeles, 2007) and Argentina, Mexico, and Venezuela (Inter-American Development Bank, 2004; Maloney, 2004; Duryea et al., 2006; Beccaria and Groisman, 2007; Pagés and Stampini, 2007). It would be expected that changes in whether a person is employed and in the type of employment would be linked to changing income and earnings. Indeed, research findings bear this out. Households whose heads gained employment or (where available) gained formal sector employment were the ones that exhibited the largest per capita income gains in Indonesia, South Africa, and Venezuela (Fields et al., 2003b). In Korea, the loss of employment was a major factor producing downward income mobility during that country's financial crisis of the late 1990s (Yoo, 2004). In Argentina, Mexico, and Venezuela, workers who moved from formal wage employment to informal wage employment on average experienced a decline in monthly

¹³ It is worth noting that in the United States, earnings mobility equalized longer-term earnings relative to initial in the 1970s but disequalized longer-term earnings relative to initial in the 1980s (Fields, 2010), while in France earnings mobility always equalized longer-term earnings relative to initial (Buchinsky et al., 2003).

earnings, while the reverse move produced the reverse earnings change on average (Duryea et al, 2006). In South Africa, although earnings mobility is strongly influenced by sector change, research has shown that it is not necessary to acquire a formal sector job in order to achieve earnings gains; indeed, the majority of those who achieved earnings gains in South Africa did so *within* the sector where they were employed (Cichello et al., 2005). Despite what is known, it remains to examine more systematically the changes in earnings for those who make various labor market transitions (for example, between wage employment, household enterprises, and self employment; between formal and informal employment; between major economic sectors such as agriculture, industry, and services) as well as the changes in earnings for those who do *not* make such transitions.¹⁴

Another variable that has been explored is non-economic shocks. For example, it was found in Pakistan that low-income rural households suffered more from natural disasters than more privileged households did (Villanger, 2003). On the other hand, in Indonesia, neither positive shocks nor negative shocks disproportionately affected poor households (Newhouse, 2005). As for man-made disasters, a study in Rwanda showed that households experiencing the murder or imprisonment of one of their members moved considerably downward in the income distribution (Verpoorten and Berlage, 2007).

What is striking is that many of the variables which have been shown to be important in determining earnings *levels* turn out to be remarkably unimportant in explaining earnings *changes*. For example, education is a key determinant of earnings levels all over the world (Psacharopoulos and Patrinos, 2004). And yet education explains only 1.5% of earnings change in Indonesia, 0.6% in South Africa, and 0.1% in Venezuela (Fields et al, 2003b). An explanatory variable can be said to be unimportant if it is either statistically insignificant or economically insignificant. (A variable is termed “economically insignificant” in the unconditional context if a simple regression of income or earnings change on that variable produces an R^2 less than 1%.) In the study of Indonesia, South Africa, and Venezuela, variables that were shown to be unimportant included gender of the head of the household (insignificant in all 3), education of the head of the household (insignificant in 2), age of the head of the household (insignificant in all 3), and geographic region (insignificant in 2). Similarly, in a study of Tanzania, education and age were statistically insignificant determinants of earnings growth (Quinn and Teal, 2008).

Another question examined in the literature is the symmetry of mobility hypothesis. This is the idea that those groups that experience the largest earnings gain in dollars when the economy is growing are those that experience the largest earnings losses in dollars when

¹⁴ It is obvious that those who started unemployed and became employed necessarily experienced earnings gains, and likewise those who became unemployed necessarily experienced earnings losses. What is not obvious is that the people who transitioned into or out of unemployment are a small minority. For example, in Argentina, which suffered a real GDP decline of 13.5% between 2001 and 2002 and a large increase in unemployment, 89% of the individuals who were employed in 2001 were also employed in 2002. When the analysis is limited only to the individuals who were employed in both years, it remains the case that sector of employment is the second most important factor (after initial reported earnings) in explaining earnings changes. See Fields and Sánchez Puerta (2005) for details.

the economy is contracting. Using the multiple panels available in Argentina, Mexico, and Venezuela, Fields et al. (2007) tested this hypothesis comparing positive growth and negative growth years for six variables: initial reported earnings quintile, gender, age, education, sector transition, and geographic region. Only for gender in Venezuela was it the case that the group that gained the most in times of growth (men) did worst in times of economic decline. For the other variables in Venezuela and for all the variables in Argentina and Mexico, when statistically significant differences between groups were found, the same groups that experienced the most positive earnings changes when the economy was growing also did best when the economy was contracting. In sum, symmetry of mobility does *not* hold generally, at least in studies so far.

Finally, some unconditional micro mobility studies have used positional change rather than earnings change as the dependent variable. Examples are studies of Malaysia (Trczinski and Randolph, 1991) and China (Zhang, Huang, and Mi, 2006). The Malaysia study reached an interesting conclusion: “Only one action enhanced an individual’s prospect for relative mobility. By actively searching out new jobs in response to changing economic circumstances, an individual could increase the prospects for upward mobility.”

Conditional Micro Mobility

Turning now to studies of conditional micro mobility, these studies run descriptive multiple regressions of the form

$$\Delta Y_{i,t} = \alpha + \beta_1 Y_{i,t-1} + \beta_2 Z_i + \beta_3 X_{i,t-1} + \beta_4 X_{i,t} + \varepsilon_{i,t} \quad (3)$$

or

$$\Delta \log Y_{i,t} = \alpha' + \beta_1' Y_{i,t-1} + \beta_2' Z_i + \beta_3' X_{i,t-1} + \beta_4' X_{i,t} + \varepsilon'_{i,t}. \quad 15$$

(3')

In (3), the dependent variable $\Delta Y_{i,t}$ is the same as it was in (1) and (2): the change in income or earnings in dollars between the initial year $t-1$ and final year t . On the right hand side, $Y_{i,t-1}$ denotes the income or earnings reported in the initial year, Z_i denotes time-invariant individual characteristics like age, gender, race, and education, $X_{i,t-1}$ and $X_{i,t}$ denote time-varying individual characteristics like occupation and sector of employment in years $t-1$ and t respectively. The estimate of coefficient β_1 in (3) is used to determine whether mobility is strongly conditionally convergent. If $\beta_1 < 0$, there is strong conditional convergence; if $\beta_1 > 0$, there is strong conditional divergence; and if $\beta_1 = 0$ or is not significantly different from zero, the pattern of earnings change is neutral with respect to initial earnings, i.e., recipients in different parts of the initial earnings distribution gain the same amount in dollars (and hence those who report low initial earnings gain more in percentage terms than those with higher reported initial earnings). Researchers have also used change in $\log Y$ as the dependent variable as in (3'),

¹⁵ “Descriptive regression” means that the regression coefficients do not necessarily have a causal interpretation.

in which case the regression coefficients measure changes in percentages rather than in dollars and the resultant β_1 ' provides a test of weak conditional convergence.

Looking first at the β_1 and β_1 ' coefficients in (3) and (3'), the overwhelming pattern in the literature is that they are negative. and thus, incomes and earnings converge to their conditional mean. When reported initial incomes and earnings have been used, strong conditional convergence has been found for income mobility in India (Coondoo and Dutta, 1990), Côte d'Ivoire (Grootaert, Kanbur, and Oh, (1997), Indonesia, South Africa, and Venezuela (Fields et al., 2003b) and for earnings mobility in South Africa (Cichello et al., 2005), Argentina, Mexico, and Venezuela (Fields et al., 2007). Some studies tested only for weak conditional convergence, which was found for income mobility in Chile (Scott and Litchfield, 1994) and South Africa (Woolard and Klasen, 2005). Finally, when predicted incomes were used instead of reported incomes, weak conditional convergence was found in Indonesia and South Africa but not Venezuela, but strong conditional convergence was not found in any of the three.

Switching our attention from initial income or earnings to the time-invariant variables (Z) and the time-varying variables (X) in (3) and (3'), the literature reveals that other variables also play a role in explaining changes in income or earnings:

- The conditional effect of education was found to be statistically significant and positive in Peru (Herrera, 1999), South Africa (Cichello et al., 2005), Argentina, Mexico, and Venezuela (Fields et al., 2007).
- The conditional effect of gender (being male) was found to be statistically significantly positive in South Africa (Cichello et al., 2005), Argentina, Mexico, and Venezuela (Fields et al., 2007). On the other hand, another study of Argentina found a statistically significant negative effect of being male (McKenzie, 2004).
- The conditional effects of sector transitions were statistically significant in South Africa (Cichello et al., 2005; Woolard and Klasen, 2005) and Argentina, Mexico, and Venezuela (Fields et al., 2007).
- The conditional effect of geographic region was found to be statistically significant in Côte d'Ivoire (Grootaert, Kanbur, and Oh, 1997) but insignificant in Argentina, Mexico, and Venezuela (Fields et al., 2007).

Among the statistically significant variables, not all are economically significant. In the conditional mobility context, a variable may be judged to be conditionally unimportant if either a) it is statistically insignificant or b) the decomposition weight on that variable is less than 1%.¹⁶ In Indonesia, South Africa, and Venezuela, variables that were shown to be conditionally unimportant in explaining income mobility were the same ones that were unimportant unconditionally: gender of the head of the household, education of the head of the household, age of the head of the household, and geographic region (Fields et al, 2003b).

¹⁶ The decomposition weights come from a method devised by Fields (2003).

Relevance for Policy

The empirical findings presented in this paper offer some guidance on which policy options merit further consideration and which ones do not. Among the alternative policy interventions are: creating more good jobs, raising earnings and productivity in the bad jobs sector, raising individuals' skills through education and training, providing credit, creating fallback jobs for those who want and need them, and improving labor market information systems.

Let us take as given that the objective of policy is to reduce low earnings in the labor market to the maximum extent possible. When would each of these six policy interventions be a compelling policy priority, and alternatively, when would each of these policy interventions *not* be a compelling policy priority? Empirical research offers guidance to the policy-maker.

Suppose a country exhibits close-to-perfect mobility. Then in the normal course of things, economic mobility could be counted on to raise a lot of low earners up, but also push a lot of high earners down. What would *not* be helpful in such a setting would be such interventions as training and credit; these would not be helpful in a very high mobility setting, because some workers would be low earners because of the bad luck of the draw this time, but they would get a new draw next time. What *would* be a policy priority if mobility were close-to-perfect would be the creation of more good jobs, because such a policy would raise the expected earnings of everyone over a number of periods. The further a country is from perfect mobility, the less obvious it is that the creation of good jobs is more important than other labor market policy interventions.

Suppose instead that a country has close-to-zero mobility. Then, if the labor market were simply left alone, many individuals would be trapped in low-earnings situations with no hope at all of escaping while many others would be in a very sticky situation from which some could escape but most could not. Clearly, some intervention would be called for, but which one? What would get some of these people out of low earnings? The answer depends in large part on what it is that is keeping their earnings low. If the low earners cannot possibly do better in the sectors where they are now, then consideration should be given to how to get them out of where they are now. Expanding job opportunities in the good jobs part of the economy would be helpful in such a circumstance. On the other hand, there may well be scope for raising low earnings in the poorer sectors of the labor market by relaxing the constraints that now consign low earners to a life of economic misery. Among the policy actions that might do this are providing workers in the bad jobs sectors with more to work with, raising individuals' skills through education and training, providing credit and business know-how to raise their self-employment earnings, and making available fallback jobs so that when all else fails, the low-earners have someplace to turn in order to be able to earn something in the course of a day, a week, or a month.

Can policy ever be influenced by mobility research? An example of where research had a direct policy impact occurred in South Africa, on which the author has worked. A high official in the National Treasury told us that he believed that the only way to get ahead in

the South African labor market is to acquire a formal sector job. (In the South African context, a formal sector job is one that is registered by the government and subject to all of the labor market protections provided under the law.) Mobility research that we conducted showed two quite different things. First, although *some* workers did indeed get ahead by moving from informal to formal jobs, the great majority of workers who got ahead did so *within* the sectors where they already were working. And second, the rate of increase in earnings in rand (the South African currency) was the same for the formal sector as for the informal sector. These findings showed the government that the informal sector was much more dynamic than they had previously thought, and so they responded to this mobility research in their next budget message by placing much more of emphasis on raising earnings within the informal sector than they had previously.

On the other hand, based on our reading of the literature on developing countries' labor markets, what seems to be appropriate rarely if ever would be efforts to improve labor market information systems. It is doubtless true that any given individual could have an improved chance of getting a better job if he or she had better labor market information. However, policy-makers need to be aware of the fallacy of composition: unless there are more jobs, anything that makes it more likely for Individual A to be hired makes it more likely for Individual B *not* to be hired. The existing research gives no indication that what is constraining upward mobility in the economy as a whole is lack of information on the part of employers as to where to find workers or lack of information on the part of workers as to where the wages and other job conditions are better. Rather, in developing countries, the major problem is a lack of good jobs for all the job-seekers who are available for such work and capable of performing it. Policy-makers should therefore be cautioned that labor market information systems are likely to produce minimal social benefits, perhaps at quite high social cost.

In conclusion, mobility research may lead policy-makers to judge which certain policy interventions are likely to be beneficial in a given country context and which would not be. This is itself important information, but it is not enough. Policy-makers and those that advise them need to ask other questions. How large are the benefits from a given policy intervention likely to be? What are the direct costs of a given policy intervention under consideration? What are the opportunity costs? More cooperation between mobility analysts and public economists are likely to lead to better answers for policy-makers.

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