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2010

working paper series

THE DYNAMICS OF POVERTY AND
INEQUALITY IN AN ERA OF
ECONOMIC LIBERALIZATION:
THE CASE OF EGYPT

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Working Paper No. 539

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September 2010

This research has benefited from the financial contribution of ERF as part of the ERF-GDN Regional Research Competition. The content of this publication is the sole responsibility of the authors and can in no way be taken to reflect the views of ERF or GDN.

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First published in 2010 by
The Economic Research Forum (ERF)
7 Boulos Hanna Street
Dokki, Cairo
Egypt
www.erf.org.eg

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Abstract

This paper provides a detailed analysis of the dynamics of moving in and out of poverty and inequality in Egypt, utilizing a recent, nationally representative panel survey. It studies the dynamics of poverty using both measures of income and measures of consumption. This provides an opportunity to compare poverty measures and dynamics using these two related, but not identical measures of economic well being. It also shows the difference between urban and rural families, and the use of region specific poverty lines. Regression methods are used to identify the determinants of chronic and transitory poverty over this period in Egypt, and the determinants of moving between and within income groups. The ultimate goal of this paper is to devise and recommend a set of high impact short term policies with immediate measurable results as opposed to grander schemes.

ملخص

تقدم هذه الورقة تحليلاً مفصلاً لديناميات الدخل والخروج من الفقر وعدم المساواة في مصر ، وذلك باستخدام مسح قومي تتبعي حديث. تقدم الورقة دراسة ديناميات الفقر باستخدام مقاييس الدخل والاستهلاك. وهذا يوفر فرصة للمقارنة بين مقاييس الفقر وديناميات استخدام هذين ذات الصلة، ولكن لا يوفر المقاييس المتطابقة من الرفاه الاقتصادي. بل تظهر أيضاً الفرق بين الأسر الحضرية والريفية ، واستخدام خطوط الفقر في مناطق محددة. وتستخدم أساليب الانحدار لتحديد محددات الفقر المزمّن والعابر خلال هذه الفترة في مصر ، ومحددات المتنقلين بين وضمن فئات الدخل. والهدف النهائي من هذه الورقة هو ان توصي بمجموعة من السياسات ذات التأثير الكبير على المدى القصير مع نتائج قابلة للقياس على الفور بدلاً من المخططات الضخمة.

1. Introduction

Has growth really been good for the poor in the Middle East and North Africa (MENA)? The reduction of poverty and inequality are deemed central characteristics of the process of development. No country can comfortably boast a high growth rate without simultaneously demonstrating at least some success in the reduction of its poverty and inequality. The MENA region is credited with having managed to lower its level of poverty and inequality significantly over the last 30 years of the twentieth century, when compared to other regions of developing countries (Adams and Page 2004, Page 2007), however, these measures have been on the rise over the last few years, and the degree of success varies widely from one country to another. Egypt is the country with the largest poverty problem in terms of sheer numbers of poor in the MENA¹.

Egypt has recently boasted a growth rate of almost 7%², however, poverty and inequality in Egypt over the last five years have been on the rise. In the most recent assessment of poverty and inequality in Egypt performed by the World Bank, using the 2004/2005 Household Income, Expenditure and Consumption Survey and regional poverty lines, the absolute poverty rate increased from 16.7% in 2000 to 19.6% in 2005, which is a complete reversal of the decline in poverty incidence from 1996 to 2000³. “Near poverty”⁴ on the other hand affects an additional 21% of Egyptian households, bringing the total poor to over 40% of the population.

Inequality also continued to increase as recorded by a widening gap between the richest and poorest groups in society. The ratio of the percent of expenditure by the richest decile relative to that by the poorest decile increased from 6.2 to 7.3 over the period 1996 to 2005, which translates into a 17% increase in this crude measure of inequality⁵. Said (2007), also reports a U-shaped trend in wage inequality in Egypt over the period 1988 to 2006.

These trends in poverty and inequality bring to the forefront important questions about the recent growth performance’s effect on the poor and vulnerable in the economy. It brings about questions relating to the dynamics of moving in and out of poverty, and from one income group to another. To what extent does this kind of mobility exist in Egypt during an era of economic reform, increased liberalization and outward-orientation? Which individual and family characteristics facilitate or hinder this kind of mobility? How do we explain its existence or lack of it?

The availability of a new unique nationally representative panel data set for Egypt will allow us to answer these questions more fully. For the first time, on a representative scale we can actually study the same households and individuals over time —between 1998 and 2006. This dataset will allow us to track those individuals who are transitory poor versus those who are chronically poor. It will also allow us to study the characteristics of each and thus come up with a profile for those who are likely to get out of poverty and those who are chronically poor. This has important policy implications. The ability to identify those who are chronically poor will allow policy makers to focus social programs where they are most needed. For those who are transient poor, an identification of the causes of their falling into poverty can

¹ Egypt and Yemen both have poverty rates that are more than twice as high as the average for the MENA region (Iqbal and Nabli 2006). However, Egypt has a much bigger population (about 4 times that of Yemen) and thus the number of Egypt’s poor was around 14 million people in 2006, while those in Yemen were around 8 million (based on national poverty lines).

² Economist Intelligence Unit, Country Profile 2007. Retrieved November 29, 2007 from www.economist.com.

³ World Bank (2007).

⁴ In World Bank (2007), absolute poverty is defined as “spending less than needed to cover absolutely minimal food and non-food needs”, and near-poverty is defined as “spending barely enough to meet basic food [needs] and slightly more than essential non-food needs”.

⁵ Authors calculation based on expenditure shares by decile in World Bank (2007).

help us find ways to prevent this, while knowing what could make them stay/move out of poverty will be insightful to policy makers who can then design policy interventions specifically to help ‘push’ them out of this transient poverty status.

To answer these questions, this paper will provide a detailed analysis of the dynamics of moving in and out of poverty and inequality in Egypt, utilizing a recent, nationally representative panel survey⁶. I will then use regression methods to identify the determinants of chronic and transitory poverty over this period in Egypt, and the determinants of moving between and within income groups. I will study the dynamics of poverty using both measures of income and measures of consumption. This provides an opportunity to compare poverty measures and dynamics using these two related, albeit not identical measures of economic well being. I will also carry out this study differentiating between urban and rural families using region specific poverty lines.

I will tackle each of these questions primarily from a micro perspective utilizing data from detailed household and labor force sample and panel surveys. Even though my focus in this analysis will be on Egypt, policy implications will be drawn and generalized into lessons for MENA by examining cross-country and regional aggregate indicators to make comparisons and provide policy implications.

The ultimate goal of this research is to devise and recommend a set of high impact short term policies with immediate measurable results as opposed to grander schemes. The concept of pro-poor growth and getting the poor to share in the fruits of the present growth are high on the list of priorities of the current Egyptian administration. However, without a detailed analysis of how and why some groups seem to be affected by the current policy changes, any such recommendations would be baseless. The results of this research will thus help guide policy makers as to what factors might be the main hindrances in the face of pro-poor growth, and where interventions might bear the greatest and fastest positive outcome. It will also provide detailed insights into the individual and household characteristics most conducive to moving out of poverty.

2. Related Literature

The ability to track the income levels and poverty status of individuals over time can provide tremendous insight into the process by which poverty declines or increases over time, and the relationship of any such changes with growth and distributional changes. A considerable literature that investigates the dynamics of income and poverty mobility for advanced economies exists. In the USA and the UK national longitudinal surveys have been collected for much longer time frames and have thus awarded researchers the opportunity to study patterns of mobility and moving in and out of poverty extensively⁷. However, these results may not be applicable to developing countries where economic, social and political conditions and constraints may make it either more or less difficult for mobility to take place depending on the country under study and the time period.

Panel studies of poverty and inequality dynamics are quite rare for developing countries due to data limitations. Baulch and Haddinot (2000) provide a good overview of these studies and their results. As far as I know there is only one previous study that analyzes the dynamics of poverty in Egypt. Haddad and Ahmed (2003) study chronic and transitory poverty in Egypt between 1997 and 1999. Their analysis shows that 66.7% of total poverty, 67.9% of total

⁶ Haddad and Ahmed (2003) also study poverty in Egypt using a panel dataset, however their study is limited to a very small sample size (347 households) that covers a two year period in the late 1990s, a period of decreasing absolute poverty in Egypt as a whole.

⁷ See for example Buchinsky and Hunt (1999), Steckel (1990) for the USA, Jarvis and Jenkins (1995, 1998) for the UK and Zaidi and de Vos (2002) comparing the UK with Netherlands, to name a few.

rural poverty, and 63.9% of total urban poverty is chronic, indicating a persistent poverty trend. Using quantile regressions they find that household size, number of children under 15 and employment activity in non-farming sectors reduces chronic poverty, while schooling, physical assets such as land and livestock and living in an urban location decreases chronic poverty. However their study is limited to a very small sample size (347 households) that covers a two year period in the late 1990s, a period of decreasing absolute poverty overall in Egypt. My study of the dynamics of poverty will utilize for the first time a large, nationally representative survey of incomes across a longer time frame, within a period where the direction of poverty changes was mixed.

3. Conceptual Framework and Methodology

My analysis will focus on investigating the dynamics of moving in and out of poverty in Egypt, and the prospect of income mobility, especially for those at the lowest end of the distribution. As observed earlier, both poverty and inequality have witnessed a U-shaped development over the last decade or so. The availability of panel data that tracks the same individuals from 1998 to 2006 in the Egypt Labor Market Survey (ELMS 1998) and the Egypt Labor Market Panel Survey (ELMPS 2006), provides a unique opportunity to gain insight into what drives chronic vs. transitory poverty. As far as I know this is the only study that has utilized the panel aspects of this dataset and thus has the potential to uncover the causes and hindrances to escaping poverty in an era of wide-ranging policy reforms.

I will start by analyzing the prospects of remaining poor vs. escaping poverty using various cutoff points along the distribution. This will allow us to construct a transition matrix that depicts the probability that a given individual will stay in his/her initial position along the income distribution, against that of moving up/ down the distribution. Such transition matrices can be constructed for various attributes of the individual, such as gender, age group, occupation, educational attainment, region of residence, etc. I can then calculate the Shorrocks (1978) measure to determine the extent to which there is mobility over this period. The Shorrocks measure is defined as

$$\hat{M}(P) = \frac{n - \text{trace}(P)}{n - 1} \quad 8 \tag{1}$$

Where P is the transition matrix, n is the number of states (the size of the matrix). The Shorrocks measure ranges from zero to one and the larger the measure the higher the degree of mobility. This measure will again be calculated by various attributes of the individual, such as gender, age group, occupation, educational attainment, region of residence, etc. The Shorrocks is however uninformative about mobility within off-diagonal elements of the matrix. To examine mobility for these groups I will study the percentage of people whose decile position declined or increased by 1 or 2 positions over the period, again to determine the characteristics of the “stayers” versus the “movers”.

I will then follow a more rigorous regression approach to determine the independent role of the factors that are most important in determining the movement up/down the distribution. The conventional model examines the effect of economic and demographic household and residence location level characteristics on the size of the move along the distribution. Specifically,

$$P_{t+n} - P_t = \beta_0 + \beta_1 H + \beta_2 I + \beta_3 R + e \tag{2}$$

⁸ This measure was shown to have all the desirable properties of a measure of mobility by Shorrocks(1978).

Where P_t is the percentile position at time t , H is a vector of household characteristics such as number of dependents, I is a vector of individual characteristics such as gender, age, education, occupation, etc, R is the region of residence and e is an error term.

A similar methodology will be adopted to investigate the prospects of remaining poor versus escaping poverty. Here I will first construct a transition matrix in relation to a poverty line, again calculate the Shorrocks measure, for the full sample and by individual characteristics. I can then employ a similar estimation equation to that in (2) to investigate the probability of remaining poor over the period. I can then study the determinants of chronic and transitory poverty separately. The dependent variable for chronic poverty will be a binary variable that takes the value 1 for those who were poor in 1998, and stayed poor in 2006, and 0 for those who were no longer poor in 2006. I can also examine the probability of a non-poor person falling into poverty by defining the dependent variable as 1 for those who were non-poor in 1998 but became poor in 2006, and 0 for those who remained non-poor throughout the period. I can then use standard binary logit or probit models to estimate the model. An alternative approach will be to use a multinomial approach and define the dependent variable with never, chronic and transitory poverty as the outcomes. Both approaches will be followed here to determine which one gives more robust estimates.

4. Data

The data used in this study comes from the 1998 and 2006 Egypt Labor Market Panel Surveys (ELMS 98 and ELMPS 06). These nationally representative labor force sample surveys were conducted by the Economic Research Forum (ERF) in cooperation with CAPMAS. The ELMPS 06 tracks the labor market and demographic characteristics of the households and individuals interviewed in ELMS 98, new households that have emerged as a result of splits in the original households, and a refresher sample of entirely new households.

The panel data consists of 3,684 households from the original ELMS 98 survey and 2,167 new households that emerged as a result of splits in the original households. Of the 23,997 individuals interviewed in 1998, 22,987 were still alive or in the country in 2006 and 17,357 of those (75.5%) were successfully re-interviewed in 2006.

I will rely on two separate measures of welfare for this study. I will use both real monthly earnings (per family and individual), as well as an estimated family expenditure measure. The latter measure was estimated by Assaad and Roushdy (2008), where they used the common characteristics of households from both ELMS 98 and ELMPS 06, and the Household Income, Expenditure and Consumption Surveys (HIECS) of 1999/2000 and 2004/2005 to estimate a consumption level for each household based on these characteristics.

In this type of analysis of the dynamics of poverty and the extent of economic mobility, each type of welfare measure has its advantages and disadvantages. Incomes are in some cases more accurately reported than expenditures since they are easier to recall. Using incomes is also usually the only way we can identify the source of any mobility, for example whether it is due to demographic or economic events (Woolard and Klasen 2005). Expenditures on the other hand may be a better indicator or permanent income when households exercise consumption smoothing, which is common among the poor (Deaton 1997). Expenditures are thus preferred if one is more interested in a long term measure of mobility. I will use both incomes and the estimated expenditure levels in my analysis, and thereby also be able to point out to differences between conclusions based on the two measures.

5. Results

5.1 Income Mobility between 1998 and 2006

I begin by reporting the probabilities of moving between quintiles along the income distribution using Markov Chain transition matrices. A transition probability matrix (\mathbf{P}) is an $n \times n$ matrix where n refers to the number of categories. The element in the j th row and k th column gives the probability that an entity moves from the j th to the k th category between periods. The larger the diagonal elements, the lower the degree of mobility. Rows represent 1998 income, columns 2006 income in real terms.

Table 1 reports the transition matrix for all wage earners in the sample. We limit the analysis to those who were wage earners in both 1998 and 2006 to avoid having to deal arbitrarily with estimating the income/wealth of non-wage earners in either year, and also to avoid making any assumptions about the level of income that an individual would have made had they entered the labor force before 1998. Table 1 shows that 47% of those who were in the lowest income quintile in 1998 stayed in the same quintile in 2006, while 27% escaped to the second quintile, 13% to the third, and 6% to each of the fourth and fifth quintiles.

For those in the second quintile in 1998 however, as many people moved up one quintile as those who moved down, indicating a less clear cut potential for mobility. As expected, those who were in the third quintile or higher in 1998 were also less likely to move upwards than downwards. The Shorrocks Rigidity Index for individual earnings was 0.93. Recall that a value of one would mean no mobility at all, while 0 would indicate perfect mobility. For comparison, in South Africa between 1993 and 1998 this was 0.89, while the average for mature industrialized countries is about 0.95. Thus there is a good amount of mobility in terms of individual earnings, although of course in many cases this represents a movement downward.

Tables 2 and 3 show the transition matrices for males and females, separately. Comparing the two matrices, we see that females are more likely to remain “stuck” at lower ends of the distribution. They are also more likely to fall down into lower quintiles if they were already in the lower 40% of income earners. In the upper income levels, differences between males and females become less pronounced, and in fact females are able to maintain or improve their status somewhat more.

Note that I have restricted the sample to those who were wage earners both in 1998 and 2006, so this finding does not reflect the fact that only those women with “good jobs” or high paying jobs are likely to stay in the labor market. It is probably more of a reflection of the fact that women with low skills and low earnings potential usually find it harder to “move up” the scale once they have entered the labor market.

Table 4 presents the transition matrix by family income⁹. Family income is of course a better indicator of the overall well-being of a family as a whole, since much consumption sharing takes place within a family. Comparing it to the results for all wage earners in Table 1, we see little difference in mobility for the lower 60% of the distribution between family income and individual income. Families at the highest 40% of the distribution however, are more likely to stay there or to move upwards. This is especially true if they were in the fourth quintile in 1998 (10% more likely to remain in the top 40% in 2006 than individual earners). The Shorrocks Rigidity Index for family income at 0.91 also reflects this slightly higher degree of mobility.

⁹ Family income is defined as the sum of all income earned by all members of the same family.

5.2 Mobility based on Expenditure between 1998 and 2006

For comparability purposes, I also report transition matrices based on the estimated per capita consumption (EPCC) calculated by Assaad and Roushdy (2006). They estimated this EPCC using a two-stage estimation technique that combines similar individual characteristics found in HIECS of 1999/2000 and 2004/2005 and the ELMS 98 and ELMPS 06. This will allow me to make a rough comparison between mobility based on consumption and that based on income, since actual consumption data is not available in the ELMS or ELMPS¹⁰.

The expenditure transition matrices are in Tables 5 and 6. Table 5 presents the transition matrix for individual EPCC levels, while Table 6 presents it for family EPCC. In general, these show much less mobility than by income. For example, more than 60% of those who were in the lowest quintile in 1998 remained there, with the majority of movement only up to the second quintile. This contrasts with transition matrices based on income, where only 47% remained in the lowest quintile.

This is also true of all other quintiles: the percent of those who remained in the same quintile using the EPCC is much higher than that using income. There is no clear indication however that more people moved down the distribution using EPCC which is somewhat reassuring. In the highest quintile, we also see much less mobility downwards, indicating that the richest were largely able to maintain their positions in the distribution based on expenditure. This lower mobility level is also confirmed by calculating the Shorrocks Rigidity Index, which comes out 0.95 for individual EPCC, and 0.94 for family EPCC. These levels of mobility are low by developing country standards, matching more closely the trends in mature industrialized countries. Hence, when using expenditure figures, Egyptians' economic mobility is quite low.

5.3 Chronic and Transitory Poverty, 1998 to 2006

Transition matrices provide information only on the extent of movement up or down along the income distribution. However, they do not tell us anything about whether this movement was in fact sufficient to pull the poor out of their poverty. In this section, I report transition matrices in relation to several different poverty lines. We use poverty lines from World Bank (2007) for 2004/2005 updated to 2006 prices using the CPI. All income and expenditure data are also expressed in 2006 prices using the CPI

These poverty lines are calculated based on the cost-of-basic-needs methodology, and account for differences in consumption patterns and prices across regions, and differences in household size and decomposition. The cost of the actual diet consumed by Egyptians of different ages and classes, not a hypothetical one based on caloric requirements, is used to calculate these poverty lines, and economies of scale in consumption — or consumption sharing — are taken into consideration. Following the World Bank (2007) study, I will also use three different poverty lines: food poverty line (FPL), poverty line (PL) and upper poverty line (UPL). The FPL reflects the cost of the food bundle using the relative quantities observed in the diet of the poor (as proxied by the second quintile), and the prices they actually faced. Individuals and households whose expenditure was below the FPL will be referred to as "extreme poor" (World Bank 2007). The PL was constructed by allowing for expenditure on essential non-food expenditure items in addition to the FPL. The UPL was calculated by estimating the non-food component of the poverty line as the non-food expenditure of households whose food expenditure equals the food poverty line.

To be able to use the income data to make comparisons about poverty status, comparable Low Earnings Lines were developed. These were calculated by first dividing each regional

¹⁰ Data from the HIECS is not made publically available except in published form by CAPMAS, and therefore, I could not use it directly. Assaad and Roushdy kindly provided me with their data to help facilitate this research.

poverty line by 12 to account for the fact that income data is monthly while the expenditure-based poverty lines are annual. Second, since each worker supports several other household members, the monthly poverty line for each region was then scaled up by the regional average dependency ratio (calculated as the median ratio of household members to working-age employed household members). This gives us three Low Earnings Lines (LELs): the Food LEL, based on the FPL, the LEL, based on the PL and the Upper LEL, based on the UPL. These LELs and PLs are summarized in Table A1 in the appendix by region.

Before describing the transition matrices based on poverty lines, it is useful to look at changes in the income and expenditure distributions that occurred between 1998 and 2006. These are reported in Table 7. Real monthly incomes increased at all levels of the distribution, and the increase was slightly higher at the middle of the distribution. On average, monthly incomes increased by about 30% over the period. By contrast, estimated per capita expenditure increased for only the lower 25% of the distribution, while it decreased at higher levels. The increase for the bottom 10% was only 7% of EPCC, 1.6 % for the 25th percentile, and negative for all other groups. Note of course that monthly income is only earned by a subset of the population — those of working age and able to find a job — while expenditure data spans the whole dataset, and therefore these two conclusions are not contradictory.

Transition matrices based on these poverty lines for both monthly incomes and the EPCC are reported in Tables 8 and 9. Note that the sample is limited to those who were wage workers in both years and hence had income (Table 8), and those observations where data was available on EPCC in both years (Table 9). In Table 8a, the Food Low Earnings Line (FLEL) is used as the cutoff point as explained above. About 25% of those whose income was below the FLEL, remained below this line in 2006. There was a considerable amount of movement along the income distribution, based on this FLEL, with 51% moving above the FLEL but remaining below twice that number, 19% moving to above twice the FLEL and only 5% moving to above four times the FLEL. There is also considerable mobility downward for those who started out with higher incomes in 1998, with about 50% of those who earned more than four times the FLEL in 1998, falling to below that level in 2006.

If the Low Earnings Line (Table 8b) is used instead, a much larger number remain “Low Earners” of course, (about 42%), with most of the rest moving up to between LEL and 2*LEL in 2006. There is also slightly more mobility downward for those who started out at higher incomes in 1998. In Table 8c, the Upper Low Earnings Line (ULEL) is used, and again slightly less movement out or into “poverty” or low earnings status, is detected. A whopping 58% of those who were low earners in 1998 remained so in 2006 by this higher poverty line, while the majority of those who moved up, only moved up to the next bracket (between ULEL and 2*ULEL). In general, these results point to a considerable amount of rigidity in status for low earners, and for wage earners in general, when compared with a fixed level of “minimum acceptable earnings line” that is based on a basic needs poverty line.

Of course, given the high unemployment rates in Egypt this does not say much for the rest of the population. To augment the picture, we therefore turn to data on EPCC. The transition matrices based on preset cutoff points —the three poverty lines discussed above — are reported in Tables 9a, 9b and 9c. The picture is of course very different now. In Table 9a, we see that 9% of those who were below the Food Poverty Line in 1998 remained there in 2006. These are people who are considered extreme poor or not being able to meet even the minimum caloric requirements for their healthy survival. Of those who managed to escape, almost all only moved to between FPL and 2*FPL. There is also very little movement up for those who started out non-poor in 1998, with 70% or so staying in the same bracket for categories 2 and 3, and 50% in the highest bracket.

Using the more reasonable poverty line — that accounts for non-food essentials as well as food items — the percent of those who were chronically poor was much larger at 41% of the population, and again those who escaped just barely managed to move up to the next bracket (between PL and 2*PL). There is very little movement — up or down — in the next bracket, while of those who were in brackets 3 and 4, almost half stayed in the same bracket while the other half moved down. The Upper Poverty Line (UPL) paints an even bleaker picture. Almost 63% are chronically poor by this standard, and in the highest brackets, if there is any movement at all, most of the time it is actually downwards.

Another interesting question is to determine how many people passed each of the three LEL or PL thresholds. These earning/expenditure levels could be seen as representing milestones of welfare: being able to meet basic food needs, being able to meet food and essential non-food needs, and finally being able to meet food and more of the non-food needs actually consumed by families at similar levels of income/expenditure. They are also easier to interpret than the brackets used in Tables 8 and 9, especially that the second bracket in these tables (2*LEL and 2*PL) is likely to be very wide. Consider the PLs in Table A1 for example: 2*FPL for All Egypt is 2,059 EGP, which is 125 EGP above the UPL. Similarly, 2*FLEL for All Egypt is 528 EGP, which is 32 EGP above the ULEL. It is thus no surprise that we see the majority of individuals in both Tables 8 and 9 only moving up by one bracket.

To overcome this problem, I construct transition matrices using each of the three LELs (Table 10) and PLs (Table 11) as cutoff points. Approximately 21% of those who were “extreme poor” in 1998 based on income remained so in 2006, another 21% managed to escape extreme poverty, but still remained poor by the LEL standard, while a total of 44% of those who were extreme poor escaped poverty completely by earning income above the ULEL. Individuals who were poor by the other two LELs in 1998 were more likely to move upwards. These movements are likely a reflection of labor market conditions and the availability of formal vs. informal jobs. Hence, we see those at the lowest income levels again being more likely to remain there as these have less stable income streams and may only be seasonally/partly employed.

Table 11 shows the transition matrix based on multiple poverty lines using the estimated per capita consumption data. About 10% of those who were extreme poor in 1998 remained so in 2006. Of those who escaped extreme poverty between 1998 and 2006, almost 50% were still poor by the poverty line standard, while another 30% were still poor by the upper poverty line standard. Only 13% managed to escape poverty all together in this group. Of those who were poor in 1998 but above the FPL, about 4% fell into extreme poverty by 2006, 40% remained poor but only by the upper poverty line standard, while 21% escaped poverty altogether. A much larger number of individuals who were poor by the UPL standard in 1998, escaped poverty altogether by 2006 (47%), while 18% fell far deeper into poverty as their consumption plunged below the PL and FPL. Finally, 85% of the non-poor by the UPL remained so in 2006, while we still saw 12% falling below the UPL and the PL out of that group. In the next section, I will use regression analysis to determine the characteristics of individuals who are more likely to fall into poverty (by each of these standards), those who stay poor and those who escape it altogether.

The difference in interpretation when monthly incomes and corresponding low earnings lines are used, vs. when estimated expenditure and corresponding poverty lines are used, points to the importance of using these two measures together to produce a complete picture of movement along the welfare distribution over this period. Even though income data may be more accurate here since it is the data actually collected in this panel survey, it will only tell us about the welfare of those who worked in wage-paying jobs. The EPCC complements the picture by allowing us to explore what happened to a much larger segment of the population,

which makes the analysis much more representative and realistic. In either case, the conclusions based on these two measures of welfare are only different when the food poverty or food low earnings lines are used. Conclusions based on the other two poverty lines are very similar. The higher extreme poverty levels by income (based on the FLEL) are likely a reflection of the fact that these income earners may be in and out of work, and therefore do not have a stable stream of income, while they are still able to exercise consumption smoothing, either through savings from previous months or through in-kind donations, which are quite common in Egypt.

5.4 Determinants of Income Mobility

Table 10 presents the results of performing the regressions in equation (2). The choice of independent variables was made based on other studies of poverty and mobility determinants. The variables chosen are household size, the dependency ratio, calculated as the number of individuals below 15 and above 65 residing in the same household, and a number of demographic variables associated with each individual: age, gender, sector of employment, education level and region of residence. Values in 1998 were used throughout. The dependent variable in the first column of Table 10 is the difference in expenditure percentile between 2006 and 1998. Clearly, a larger difference indicates higher expenditure mobility. Household size is the only significant coefficient, indicating that the larger the household the higher the upward expenditure mobility over the period.

In column 2, the dependent variable is the difference in income percentile. Again, household size and education levels, especially at the postsecondary and university levels, in 1998 have a positive impact on mobility, while age has a negative impact. Columns 3 and 4 use the differences in the EPCC and incomes of each individual directly as the dependent variables. The results closely resemble those in the percentile regressions and again indicate a positive impact of household size on both EPCC changes and income changes, a positive impact of education and especially higher degrees on income changes and a negative impact of age in 1998 on income changes.

6. Conclusion

A number of interesting conclusions emerge from this analysis. First, there is an important distinction between mobility and poverty measurements based on income data, and those based on expenditure data. There is much higher mobility by income than by expenditure. Second, females seem to be “stuck” more often both in the lower and upper ends of the distribution than males, reflecting lower mobility overall. Third, exploring the question of poverty also reveals some interesting distinctions based on the measure of well-being and also on the poverty line used. Using the food poverty line which reveals extreme poverty, there are about two and half times as many poor by income than by expenditure. On the other hand, using the poverty and upper poverty lines, the numbers of poor based on these two more commonly used yardsticks are almost the same whether we use income or expenditure data. The higher extreme poverty levels by income are likely a reflection of the fact that these income earners may be in and out of work, and therefore do not have a stable stream of income, while they are still able to exercise consumption smoothing, either through savings from previous months, or through in-kind donations, which are quite common in Egypt. Finally, preliminary regressions about the determinants of income and expenditure mobility indicate a positive impact of household size on both expenditure changes and income changes, a positive impact of education and especially higher degrees and a negative impact of age in 1998 on income and expenditure changes.

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Table 1: Monthly Earnings, All Wage Earners

Quintile in 1998	Quintile in 2006					Row Total
	1	2	3	4	5	
1	0.47	0.27	0.13	0.06	0.06	1
2	0.25	0.24	0.24	0.16	0.11	1
3	0.16	0.23	0.29	0.21	0.12	1
4	0.09	0.13	0.28	0.28	0.22	1
5	0.08	0.07	0.12	0.25	0.49	1

Table 2: Monthly Earnings, All Male Wage Earners

Quintile in 1998	Quintile in 2006					Row Total
	1	2	3	4	5	
1	0.41	0.31	0.13	0.09	0.07	1
2	0.23	0.25	0.25	0.17	0.11	1
3	0.16	0.21	0.28	0.22	0.12	1
4	0.13	0.14	0.25	0.27	0.21	1
5	0.07	0.07	0.12	0.24	0.5	1

Table 3: Monthly Earnings, All Female Wage Earners

Quintile in 1998	Quintile in 2006					Row Total
	1	2	3	4	5	
1	0.56	0.19	0.16	0.03	0.06	1
2	0.28	0.31	0.19	0.16	0.06	1
3	0.06	0.32	0.34	0.16	0.12	1
4	0.07	0.15	0.21	0.36	0.22	1
5	0.03	0.05	0.08	0.31	0.53	1

Table 4: Total Family Monthly Earnings, All Wage Earners

Quintile in 1998	Quintile in 2006					Row Total
	1	2	3	4	5	
1	0.49	0.27	0.12	0.04	0.07	1
2	0.26	0.31	0.23	0.12	0.08	1
3	0.14	0.27	0.32	0.17	0.1	1
4	0.08	0.13	0.19	0.38	0.23	1
5	0.05	0.06	0.08	0.29	0.52	1

Table 5: Individual EPCC

Quintile in 1998	Quintile in 2006					Row Total
	1	2	3	4	5	
1	0.61	0.24	0.11	0.03	0.01	1
2	0.25	0.37	0.24	0.09	0.04	1
3	0.11	0.25	0.32	0.24	0.08	1
4	0.02	0.11	0.25	0.37	0.24	1
5	0	0.03	0.07	0.26	0.63	1

Table 6: Family EPCC

Quintile in 1998	Quintile in 2006					Row Total
	1	2	3	4	5	
1	0.6	0.27	0.09	0.03	0.01	1
2	0.22	0.37	0.27	0.13	0.02	1
3	0.11	0.18	0.32	0.27	0.11	1
4	0.05	0.12	0.2	0.37	0.26	1
5	0.02	0.06	0.12	0.2	0.6	1

Table 7: Distribution of 1998 and 2006 Real Monthly Wages and EPCC

Year	Percentiles of Real Monthly Wages				
	10%	25%	50%	75%	90%
2006	180	280	433.3	650	1000
1998	135.9	214.3	316.1	500.2	744
Percentiles of Estimated Per Capita Consumption					
2006	1465.48	1852.15	2415.73	3206.37	4397.52
1998	1369.82	1823.15	2432.43	3330.58	4654.18

Table 8a: Transition Matrix in Relation to a Poverty Line, Based on Real Monthly Income, and Food Low Earnings Line (FLEL)

Individuals with Real Monthly Income in 1998	Individuals with Real Monthly Income in 2006				
	Below z	Between z and 2z	Above 2z	Above 4z	Total
Below z	24.85	51.32	18.76	5.07	100
Between z and 2z	7.42	40.94	42.91	8.73	100
Above 2z	2.86	14.8	55.61	26.73	100
Above 4z	1.02	15.31	31.63	52.04	100

Table 8b: Transition Matrix in Relation to a Poverty Line, Based on Real Monthly Income, and Low Earnings Line (LEL)

Individuals with Real Monthly Income in 1998	Individuals with Real Monthly Income in 2006				
	Below z	Between z and 2z	Above 2z	Above 4z	Total
Below z	42.28	45.33	8.9	3.49	100
Between z and 2z	12.80	48.11	31.67	7.41	100
Above 2z	5.88	31.55	40.64	21.93	100
Above 4z	9.09	3.03	42.42	45.45	100

Table 8c: Transition Matrix in Relation to a Poverty Line, Based on Real Monthly Income, and Upper Low Earnings Line (ULEL)

Individuals with Real Monthly Income in 1998	Individuals with Real Monthly Income in 2006				
	Below z	Between z and 2z	Above 2z	Above 4z	Total
Below z	58.01	34.20	5.17	2.61	100
Between z and 2z	17.53	52.6	20.78	9.09	100
Above 2z	17.00	32.00	34.00	17.00	100
Above 4z	0.00	0.00	60.00	40.00	100

Table 9a: Estimated Per Capita Consumption Transition Matrix, Full Sample, Using Food Poverty Line

Individuals with Estimated Per Capita Consumption in 1998	Individuals with Estimated Per Capita Consumption in 2006				
	Below z	Between z and 2z	Above 2z	Above 4z	Total
Below z	9.9	78.75	11.35	0	100
Between z and 2z	2.10	68.00	29.57	0.33	100
Above 2z	0	20.92	72.35	6.73	100
Above 4z	0	1.93	45.80	52.27	100

Table 9b: Estimated Per Capita Consumption Transition Matrix, Full Sample, Using Poverty Line

Individuals with Estimated Per Capita Consumption in 1998	Individuals with Estimated Per Capita Consumption in 2006				
	Below z	Between z and 2z	Above 2z	Above 4z	Total
Below z	41.26	56.30	2.44	0	100
Between z and 2z	9.35	90.65	0	0	100
Above 2z	0.32	38.82	55.10	5.77	100
Above 4z	1.84	9.49	41.87	46.80	100

Table 9c: Estimated Per Capita Consumption Transition Matrix, Full Sample, Using Upper Poverty Line

Individuals with Estimated Per Capita Consumption in 1998	Individuals with Estimated Per Capita Consumption in 2006				
	Below z	Between z and 2z	Above 2z	Above 4z	Total
Below z	64.55	34.88	0.56	0.02	100
Between z and 2z	17.86	74.89	7.12	0.13	100
Above 2z	1.26	49.79	42.20	6.74	100
Above 4z	5.71	15.85	33.13	45.31	100

Table 10: Transition Matrix in Relation to Multiple Low Earning Lines (FLEL, LEL and ULEL), Based on Real Monthly Income

Individuals with Real Monthly Income in 1998	Individuals with Real Monthly Income in 2006				Total
	Below FLEL	Between FLEL and LEL	Between LEL and ULEL	Above ULEL	
Below FLEL	21.68	20.84	13.26	44.22	100
Between FLEL and LEL	7.23	12.8	20.94	59.03	100
Between LEL and ULEL	5.62	7.93	11.35	75.1	100
Above ULEL	4.51	2.68	1.91	90.89	100
Total	6.03	4.68	3.83	85.46	100

Table 11: Transition Matrix in Relation to Multiple Poverty Lines (FPL, PL and UPL), Based on Estimated Per Capita Consumption

Individuals with Estimated Per Capita Consumption in 1998	Individuals with Estimated Per Capita Consumption in 2006				Total
	Below FPL	Between FPL and PL	Between PL and UPL	Above UPL	
Below FPL	9.9	48.2	28.6	13.3	100
Between FPL and PL	3.69	35.72	39.17	21.42	100
Between PL and UPL	1.59	16.37	35.35	46.69	100
Above UPL	0.07	2.29	12.24	85.4	100
Total	0.93	9.64	20.02	69.41	100

Table 12:

	(1)	(2)	(3)	(4)
VARIABLES	diff exp_pct	diff inc_pct	diff EPCC	diff inc
hhsiz_98	2.552*** (0.287)	2.420** (1.140)	0.041*** (0.005)	0.054** (0.028)
crDpndncy1_ratio_98	-0.195 (0.249)	-1.375 (1.202)	0.002 (0.004)	-0.008 (0.029)
Age_98	0.021 (0.029)	-0.801*** (0.214)	0.000 (0.000)	-0.020*** (0.005)
Fem	1.382 (0.995)	5.098 (5.424)	0.017 (0.016)	0.141 (0.131)
pub	-2.086 (2.327)	-7.352 (5.121)	-0.035 (0.037)	-0.064 (0.124)
govern	0.363 (2.119)	0.806 (5.430)	0.013 (0.034)	0.023 (0.131)
ReadWrite	1.722 (1.490)	14.385 (9.796)	-0.000 (0.024)	0.013 (0.237)
Primary	3.317** (1.526)	15.108* (8.707)	0.020 (0.025)	0.163 (0.210)
Preparatory	0.770 (1.712)	19.965** (8.685)	-0.017 (0.028)	0.255 (0.210)
GeneralSecondary	3.613 (2.371)	36.431* (20.823)	-0.013 (0.038)	1.193** (0.503)
VocationalSec	0.496 (1.791)	25.516*** (7.861)	-0.016 (0.029)	0.320* (0.190)
PostSecondary	1.206 (3.158)	17.937* (9.497)	0.006 (0.051)	0.245 (0.229)
univabove	3.353 (2.284)	20.225** (8.440)	-0.033 (0.037)	0.241 (0.204)
alex	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
ruegypt	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
uuegypt	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
rlegypt	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
ulegypt	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Constant	-16.673*** (1.982)	11.968 (12.059)	-0.287*** (0.032)	0.721** (0.291)
Observations	1463	241	1463	241
R-squared	0.067	0.184	0.077	0.148

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Appendix

Table A1: Low Earnings Lines and Poverty Lines in 2006 Prices by Region, In EGP

Region	FLEL	LEL	ULEL	FPL	PL	UPL
Metropolitan	265.83	377.12	498.50	1060.49	1504.45	1988.69
Lower Egypt Urban	252.86	364.04	479.76	1008.73	1452.28	1913.95
Lower Egypt Rural	284.85	411.89	525.64	1023.12	1479.40	1887.97
Upper Egypt Urban	255.22	367.49	496.66	1018.15	1466.05	1981.34
Upper Egypt Rural	258.20	365.41	470.29	1030.05	1457.77	1876.17
All Egypt	263.86	377.87	495.41	1029.31	1473.74	1933.35