

**Income Mobility in China:  
Main Questions, Existing Evidence, and Proposed Studies**

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**Abstract**

The international literature presents studies of macro mobility (how much income mobility is there in the economy?) and micro mobility (which individuals experience movements of what magnitudes and what are the correlates of these movements?). In China too, both macro mobility and micro mobility studies have been conducted. This paper reviews the existing Chinese studies and proposes additional new work that can be carried out using Chinese panel data sets.

**Introduction**

As everyone at this conference knows, China has experienced rapid economic growth. The GDP growth rate in the past twenty-five years has averaged more than 9%, the highest of any country in the world.

What were the distributional consequences of this economic growth? The traditional way of answering this question is to use data from comparable cross sections to calculate various measures of inequality and (absolute) poverty. Studies following the more traditional methodology have reached two principal conclusions. First, poverty in China has fallen dramatically. And second, income inequality in China has risen sharply. Specifically, Ravallion and Chen (2007) showed that the proportion of population living

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below the poverty line decreased from 53% in 1981 to 8% in 2001, and the Gini coefficient increased from 0.31 in 1981 to 0.447 in 2001 (Figures 1 and 2).<sup>1</sup>

A newer approach in the development literature is to approach the distributional consequences of economic growth by using panel data to analyze income mobility. Compared to the ample literature on static income inequality, research on income mobility in China is still in its infancy.

In China as elsewhere, income mobility has been studied at two levels. *Macro mobility studies* address the entire economy. On the other hand, *micro mobility studies* examine patterns of income change over time for different individuals or groups.

In this paper, we pose what we see as the main questions on mobility in China, review the evidence to date on these questions, and note which questions now open would be interesting to answer in future work.

Two data sets can potentially be used to answer these questions. The *China Household Income Project Survey (CHIPS)* is a nationally representative survey including both rural and urban China. Three surveys were conducted in 1988, 1995, and 2002. Each survey included current and retrospective questions on each household's income and consumption in the previous four years – for example, in the 2002 survey, households reported their total income in 1998, 1999, 2000, 2001, and 2002. A second data set is the *China Health and Nutrition Survey (CHNS)*, which is a panel data set conducted in seven waves (1989, 1991, 1993, 1997, 2000, 2004, and 2006) in urban and rural areas in nine provinces. The CHIP and the CHNS, in addition to providing information about incomes, also include detailed information on household and individual characteristics. (Note: Other data sets with very limited geographic coverage have been used in some Chinese mobility research (McCulloch and Calandrino, 2003), but we are not proposing to analyze such data further in our research.)

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<sup>1</sup> The poverty line is set by NBS (National Bureau of Statistics) and the authors. National poverty lines are 850 Yuan per year for rural areas and 1200 Yuan for urban areas, both in 2002 prices. The national poverty lines are means of regional poverty lines, which are based on the region-specific food bundles.

### **Macro Mobility Analysis**

Macro mobility studies ask two main questions. The first is: how much mobility is there in the economy at present? The second is: how has the amount of mobility in the economy changed over time?

It is important to recognize that there is not one aspect of macro mobility; rather, there are six different concepts, each of which can be measured using alternative indices (Fields, 2007). *Time-independence* measures gauge how dependent current income is on past income. On the other hand, *movement* measures address a different issue: in comparing some aspect of the same individuals' incomes between one year and another, how much income movement has taken place? The various movement indices in the literature may usefully be categorized into five groupings or concepts ('concepts' because they are different underlying entities, not alternative measures of the same underlying entity). *Positional movement* (or 'quantile movement') is about the movement of individuals among various positions (quintiles, deciles, or centiles) in the income distribution. Like positional movement, *share movement* is relative but in a different way. Share movement takes place if and only if an individual's income rises or falls relative to the mean. Another concept is *non-directional income movement* (also called '*flux*'), which gauges the extent of fluctuation in individuals' incomes. Income changes are measured but the direction of change (positive or negative) is ignored. When the direction of change is considered, we have the concept of *directional income movement*. Finally, *income mobility as an equalizer of longer-term incomes* compares the inequality of recipients' incomes over a number of periods with the inequality of incomes measured at a single point in time.

These six concepts are as different from one another as the different aspects of income distribution are. No researcher would say "I am doing an income distribution study," nor would researchers believe that they are measuring the same underlying entity

when they calculate GNP per capita, median household income, the Gini coefficient, Theil's index, the P-alpha class, and the Sen index. (If these income distribution indices are unfamiliar to you, the first two measure the location of the income distribution, the second two measure inequality in the distribution of income, and the final two measure income poverty.) Yet, mobility researchers in China have calculated indexes of time independence, positional movement, non-directional income movement and income mobility as an equalizer of longer-incomes and presented them as though one index is measuring the same income mobility concept as another.

The macro mobility literature on China has produced the following major results. Starting with studies of mobility at a single point in time, Khor and Pencavel (2006) found that the levels of positional movement and time-independence were quite high in urban China in the first half of the 1990s. Moreover, these mobility levels in China were reported to be greater than those in the United States and other developed countries. Wang (2005) showed that income mobility helped to equalize longer-term incomes relative to initial incomes in the 1990s in both rural and urban China.

Turning to studies of mobility at different points in time, Nee (1994) found that positional movement in rural China was higher in the 1983-89 period than it had been in the 1978-83 period, which he interpreted as showing that “institutional change resulted in a dramatic shake-up of the rural stratification order.” On the other hand, Wang (2005) and Ying, Li, and Deng (2006) calculated that time independence, positional movement, and income mobility as an equalizer of longer-term incomes relative to initial incomes all fell over time in both rural and urban China.

To understand better macro income mobility in China, we plan to conduct future research to answer two questions. First, how much income mobility is there at present using measures of all six concepts rather than scattered ones? Second, how has macro mobility changed over time for each of these six concepts? Our studies will contribute to the literature by offering a more comprehensive analysis than can now be found.

### **Micro Mobility Analysis**

Micro mobility studies ask the question, which individuals or groups have more income mobility than others? The dependent variables in these studies are alternatively change in income in real yuan, change in log-income (real), and change in position (in quintiles, deciles, or centiles).

It is useful to separate out two types of micro mobility studies. *Unconditional micro mobility studies* examine such individual correlates of income change as initial income, gender, education, geographic location, and Communist party membership one variable at a time. *Conditional micro mobility studies* gauge the effect of one correlate controlling for the role of others.

Two studies to date have investigated unconditional micro mobility in China, both rural and urban. Two of these studies used data from the 1991-1995 period. Ying, Li, and Deng (2006) found that people with higher average incomes from 1991-1995 had smaller increases in log-incomes. Along similar lines, Khor and Pencavel (2006) found that people with lower income percentile in 1991 and those with a lower percentile of average income over the 1991-1995 period had larger increases in log-income from 1991 to 1995. The finding of larger increases for the initially lower income people is termed “unconditional convergence” in the literature. When log-income is the dependent variable as was the case in these two studies, a finding of unconditional convergence means that the lower-income people had larger *percentage* changes in income over time than higher-income people did, i.e, weak convergence. The international literature has tested for a stronger form of convergence – whether the lower-income people had larger *absolute* changes in income than higher-income people did (e.g., Fields et al., 2007) – but our literature review found no instance of a test of the absolute convergence question in China.

The Ying, Li, and Deng (2006) study also used data from the 1998-2002 period and found a striking reversal: those with higher average incomes from 1998-2002 had *larger* increases in log-incomes (and therefore much larger increases in incomes in yuan), in contrast to the 1991-1995 period, in which those with higher average incomes had *smaller* increases in log-income. The switch from unconditionally convergent mobility to unconditionally divergent mobility is a major finding, clearly worthy of further study.

Turning now from unconditional to conditional micro mobility, we are aware of only one study of this issue. Using data from ten provinces in rural China, Zhang, Huang, and Mi (2006) divided their sample of households into eight quintiles ranging from bottom 5% of the income distribution to top 5%. Their conditional mobility analysis involved running a multinomial logit model in which the dependent variable was the number of income quintiles moved (ranging from -2 to +2). The explanatory variables included the household's retrospective reports on previous income in the earliest year asked and in the year preceding the survey as well as time-varying household characteristics (dependency ratio, educational attainment, technical efficiency in crop production, the importance of agricultural income in total income, and the ratio of levied fee expense to the total expense of the household) and time-invariant household characteristics (whether the household head is a Communist Party member or a cadre member and whether the household rented in land or rented out land). They found that households in lower income quintiles last year had statistically significantly greater upward positional movement, i.e., conditional convergent mobility. Probably this is guaranteed by choosing the change in positions as the dependent variable. However, the effect of initial income position on positional movement was statistically insignificant. This result might be caused by the high correlation between income position in quintile in the initial year and last year, when they are both controlled together with other variables in the right hand side.

A number of micro mobility questions remain open. On the subject of *unconditional*

*micro mobility*, the existing studies have analyzed the changes in log-income and the changes in positions but not the changes in income in yuan. A mobility profile of changes in income in yuan remains to be prepared. Another gap in existing knowledge is how the income mobility profile has changed over time in the course of China's rapid economic growth.

Two parallel questions arise for *conditional micro mobility*: what are the conditional determinants of income change in yuan at present, and how have these conditional determinants changed over time? For each of several time periods, we propose to estimate two regressions. To test for conditional convergent mobility based on initial income, we will run a multiple regression of the form

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

Here, the dependent variable  $\Delta Y_{i,t}$  is the change of income in yuan between the initial year t-1 and final year t. On the right hand side,  $Y_{i,t-1}$  denotes income 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 in years t-1 and t respectively. The coefficient  $\beta_1$  estimates 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  $\beta_1 = 0$ , the pattern of income change is neutral with respect to initial income, i.e., income recipients in different parts of the initial income distribution gain the same amount in yuan (and hence those with initially low income gain more in percentage terms than those with higher initial incomes).<sup>2</sup>

We also propose to estimate whether mobility is conditionally convergent based on average income by estimating an equation of the form

$$\Delta Y_{i,t} = \alpha + \beta_1 Y_{i,average} + \beta_2 Z_i + \beta_3 X_{i,t-1} + \beta_4 X_{i,t} + \varepsilon_{i,t}. \quad (2)$$

This model is similar to the first one, except for the independent variable  $Y_{i,average}$ . It is the

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<sup>2</sup> Researchers have also used change in log Y as the dependent variable, in which case the regression coefficients measure changes in percentages rather than dollars and the betas provide a test of weak conditional convergence.

average income in yuan over time, which captures a more permanent part of income.

These two regressions will be repeated for different time periods. By doing this, we will be able to compare the patterns of conditional convergence over time and also see how the determinants of micro mobility changed in the course of China's rapid economic growth.

### **Poverty Dynamics in China**

Before concluding, we would briefly mention the literature on poverty dynamics in China.

First, panel studies have found substantial movements between poverty and non-poverty (Jalan and Ravallion, 1998; McCulloch and Calandrino, 2003; Duclos, Araar, and Giles, 2006).

Second, poverty has been found to have a substantial transient component. Jalan and Ravallion (1998) developed a method for measuring chronic and transient poverty and estimated that transient poverty accounted for almost half of total poverty in rural China. A newer method proposed by Duclos, Araar, and Giles (2006) produced a smaller but still considerable part of total poverty being due to transient factors.

Third, a significant number of those not in poverty to begin with are vulnerable to falling into poverty. McCulloch and Calandrino (2003) found that people in rural Sichuan had a high vulnerability of falling into poverty between 1991 and 1995. Over 30 per cent of households fall below the consumption poverty line at some stages.

At this time, we are not proposing any new research on poverty dynamics in China, the reason being that we see no discrete change in well-being when a household crosses the poverty line or when a worker crosses a low-earnings line.

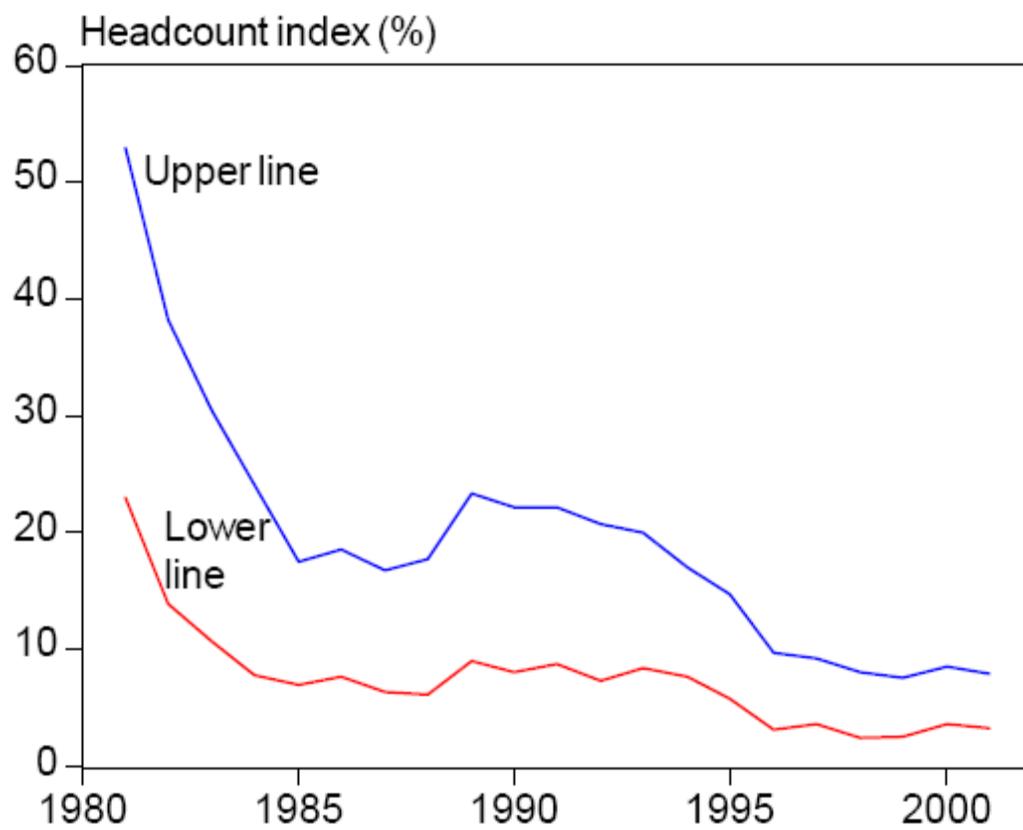
### **In Conclusion**

Panel data analysis has proved informative in China. Yet, more remains to be

learned both about macro mobility and micro mobility. Some of the earlier analysis could be updated using the 2002 CHIPS, which will shortly become publicly available.

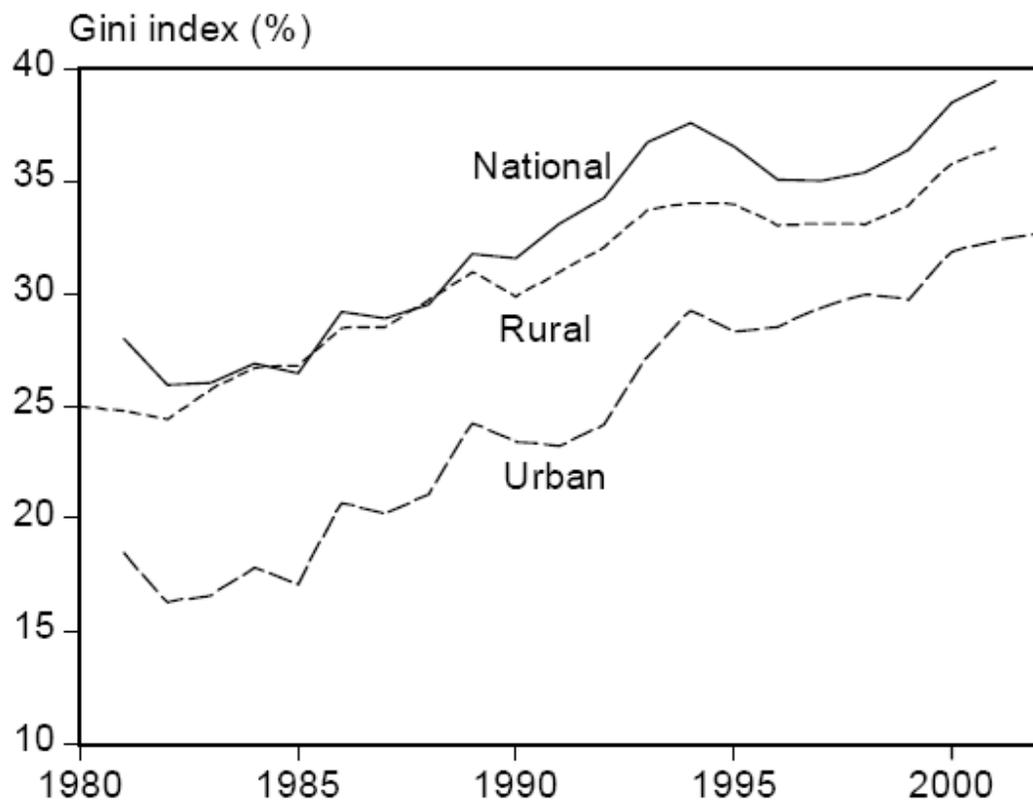
Research on income mobility in China holds considerable promise.

Figure 1: Poverty in China Between 1981 and 2001



Source: Ravallion and Chen (2007)

Figure 2: Gini Index in China Between 1981 and 2001



Source: Ravallion and Chen (2007)

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