

MEASURING GROWTH, PRODUCTIVITY, INCOME DISTRIBUTION  
AND POVERTY IN TRANSITION ECONOMIES: PROGRESS,  
CHALLENGES AND PROSPECTS

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INTRODUCTION

The market-oriented economic transition in the former centrally planned economies (CPEs), which began in China in 1978 and then spread to the former Soviet Bloc countries following the collapse of the communist governments in 1989, created many opportunities but also raised main challenges. Great attention has focused on how the economies affected have performed since the transition, and what this has meant for the well-being of citizens. Monitoring changes in output and productivity, and in income distribution and poverty, requires the collection and analysis of accurate and timely data at the economy-wide (macro) and household (micro) levels that has created a further set of challenges.

In order to promote discussion of these important issues, an International Conference on “Experiences and Challenges in Measuring National Income and Wealth in Transition Economies” was organized under the auspices of the International Association of Research in Income and Wealth (IARIW) and the National Bureau of Statistics of China (NBS). The conference brought together well over one hundred academics in the field of macro and micro measurements, official statisticians in transition economies, and researchers in international organizations to critically review progress in the transition, analyze economic performance using improved data, and discuss the challenges ahead. The conference took place in Beijing on September 18–21, 2007 and consisted of 44 papers presented to 10 sessions, spanning a variety of macro and micro themes. Although the majority of papers addressed issues relating to China, developments in Bangladesh, India, Japan, Kazakhstan, Moldova, Mongolia, Poland, Romania and Russia were also presented and discussed, and several papers addressed transition issues more generally.

The authors are the designated Guest Editors for this Special Issue.

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This Special Issue of *The Review of Income and Wealth* contains a selection of the papers that were submitted for publication after the conference. The papers that appear below have been subject to double-blind peer-review that is applied to other issues of the journal. Because they share a common theme, they will hopefully contribute to our understanding of the nature of the changes that have taken place, the underlying causes and their economic and social consequences. Our hope as Guest Editors is that they will also provoke a more constructive and productive debate on all aspects of the economic measurement problems that have inevitably emerged during the course of the unprecedented integration of the former centrally planned economies (CPEs) with the world market economy.

The papers have been separated into those relating primarily to macro and micro measurement issues. This is designed to help readers track issues that emerge from the different papers, and is not intended to imply that these two dimensions can, or should, be treated separately. Indeed one theme that emerges from the papers in both strands is the need for better integration of data at the macro and micro levels. The major macro measurement issues covered relate to basic national accounts problems in transition, measuring growth and productivity in transition economies, and the Purchasing Power Parity (PPP)-based international comparison of economic performance for transition economies. The micro issues addressed relate to cross-regional and cross-national differences and trends in inequality, the persistence and ethnic dimension of poverty in rural China, and the impact of social policy in China on urban poverty and the well-being of children.

#### MACRO MEASUREMENT ISSUES AND ANALYSIS

In macroeconomic terms, the economic transition represented a direct challenge to the existing national accounting system in the countries affected, namely the Material Product System (MPS). The MPS was developed according to the Marxist materialist doctrine and differs fundamentally from the United Nations System of National Accounts (SNA) adopted in market economies because it ignored the activities of the so-called “non-material services.”<sup>1</sup> This raised three main challenges: first, how to include the activities of the non-material services in the national accounts and how to properly measure income, inputs and outputs in market values according to the SNA principles; second, how to make the historical data collected under the MPS comparable in time and space with the data under the SNA; third (and perhaps the biggest challenge) how to facilitate the transition of the official statistical authority from being an organ of the planning system sitting on the top of a data reporting hierarchy recording output quantity and monitoring planned transactions, into an independent, professional statistical system that employs appropriate methodologies to conduct surveys and censuses in an economy whose resource allocation is no longer controlled by the state.

It is hard to exaggerate the role and importance of statistics in policy making in the modern society and economy. The transition from MPS to SNA has a

<sup>1</sup>“Non-material services” include banking, insurance, housing services, administration of real estate, social services, health, education, entertainment, personal services, passenger/consumer transportation and telecommunication, R&D activities, the armed forces, police, government and party organizations.

significant bearing on areas of economic policy making in the transition economies ranging from managing macroeconomic fluctuations to improving the income distribution and alleviating poverty. In order to ensure the effective and efficient transition, policy makers must have access to comprehensive and accurate statistics. For example, the long debated reliability of Chinese official growth rate does not simply depend on whether the actual growth rate is a couple of percentage points faster or slower than the official estimate, but on the more fundamental question of how efficient the economy is, the assessment of which is related to the reliability of measures of production, consumption and investment. Monitoring movements in income inequality and poverty can only be done with access to timely statistics on prices, income sources, household structure and consumption patterns. And just like the macro statistics build on data provided at the micro (e.g. enterprise) level, so the micro statistics need to be validated against macro benchmarks (e.g. total consumption and spending on income transfers). There is thus a need for statistics at the two levels to be integrated and consistent if their value for research and policy is to be maximized.

In his Plenary Address to the Conference, Angus Maddison focuses on China's growth performance and GDP levels measured in PPPs in comparison with other transition economies. Drawing on the latest revision and update of his earlier work on Chinese historical GDP, Maddison critically reassesses China's growth performance over the central planning and transition periods. His article has two focuses: the reassessment of official estimates of China's GDP and the PPP conversion of China's GDP. Maddison argues that the official estimates of the real value added in industry and the so-called "non-material services" were significantly exaggerated because of methodological problems and political incentives inherited in the data reporting system. After adjusting for the exaggeration of industrial performance and growth in "non-material services," his estimate of China's annual GDP growth is 7.9 percent for the transition period 1978–2003, compared with the official estimate of 9.6 percent. His reassessment challenges the view that China's post-reform growth is a "miracle" by showing that China's performance is in line with the experience of other newly industrialized economies in East Asia in the 1950s–70s.

An often ignored but important issue underlying any income level estimate for the current period is whether it makes historical sense when incorporated within a time series of growth rates. To assess what Maddison calls the "intertemporal implication," he shows that merging the World Bank level estimate for 2005 with his own growth estimates implies per capita GDP estimates of EKS (Elteto–Koves–Szulc weighting method) \$4,091 in 2005 and EKS \$326 in 1950. However, if the intertemporal change in 1990 is measured in Geary–Khamis units using the World Bank's 2005 China/U.S. ratio of 10 percent, the implied levels of Chinese per capita GDP in 2005 would be GK \$3,052, and \$243 in 1950. Both 1950 estimates are well below subsistence level, which suggests that the World Bank's estimates are doubly biased by use of EKS, and by an over-representation of high-priced luxury goods. Maddison has shown that both income level and growth rate are important for assessing the growth performance in the long run. This implies for transition economies that not only how to capture all productive activities as defined in SNA as well as how to adjust the historical data compiled under MPS, are both important—an issue that is examined in depth in the articles by Xu and by Ivanov.

Compared with many other former CPEs in the Eastern Bloc, China had the shortest history of modern national accounting before the adoption of MPS in the 1950s and the least sophisticated statistical system under MPS. However, despite such a background China has made significant progress in both the MPS-to-SNA transition and the adjustment and reconstruction of its historical accounts. The paper by Xianchun Xu, the former Head of National Accounts in the NBS and the key figure who engineered the transition, provides the first systematic account of the transition, highlighting the key reforms and measures that facilitated it, as well as existing problems.

Like the Chinese model of reform itself, the Chinese transition from MPS to SNA occurred gradually. The period between 1985 and the mid-1990s saw an important transition toward the SNA marked by the construction of China's first SNA-type (precisely, an MPS-SNA hybrid) input-output table in 1987, the first Chinese System of National Accounts (CSNA) in 1992 (although inheriting some influences of MPS), the first national tertiary census in 1993-95 for the years 1991 and 1992, the second version of the Chinese standard industrial classification (CSIC) in 1994 that is basically in line with the prevailing international standard of industrial classification (ISIC), and the third national industrial census for 1995 adopting both the 1992 CSNA and the 1994 CSIC. Continuous efforts throughout the period in adjusting and reconstructing historical accounts following changes in both conceptual framework and methodology (especially the new information on "non-material services" from the first tertiary census), resulted in the full publication of the 1952-95 time series of national and provincial production and expenditure accounts in 1997. As clearly demonstrated in Xu's paper, the whole transition was problem-driven, leading gradually to a convergence with SNA; the Chinese solution to problems was to introduce surveys and censuses that incorporated SNA concepts.

The release of the 1993 SNA motivated a further improvement of CSNA and CSIC, reflected by measures implemented during the period from the late 1990s to China's first national census in 2004. In this period, along with revisions of the CSNA, there were important policies and measures that advanced the transition, including the construction of the 1997 input-output table that was in principle fully aligned with the 1993 SNA principles, the revision of CSNA in 2002, the abandonment of the "comparable price" system in 2002 (a problematic system in measuring real income growth that had been heavily criticized by economists like Angus Maddison), the State Council's decision to implement a regular national census every five years from 2003 (postponed to 2004 due to the outbreak of SARS) and the systematic revision of historical data accordingly. Significant improvements were also made to the institutional sector accounts, along with the implementation of balance sheets of assets and liabilities at both national and regional levels. The completion of the 2004 National Economic Census was a milestone in the development of China's official statistics. It not only shifted some traditionally assumption- or rough proxy-based extrapolations to census data-based estimations, but also involved a new round of the revision of the historical accounts. However, the 2004 census also raised new questions about how to reconcile annual statistics based on the data reporting system with the census that extends to the activities outside the reporting system. In Xu's view, the solution to

this problem will involve further identifying and measuring the activities below the threshold or outside the state statistical reporting system and various newly emerged services, aligning annual estimation methods with those introduced in the census, and improving institutional sector accounts.

In contrast to China's long transition from MPS to SNA, Ivanov's paper shows that it took almost no time for the CIS to shift from the MPS developed under the former Soviet Union to the 1993 SNA, reflecting the "shock therapy" mode of economic reform. Unlike Xu, who concentrates on the conceptual differences and shortcomings of the MPS, Ivanov focuses more on the problems inherited from the past and the practice of SNA at the present time. He argues that although MPS is significantly different from SNA in terms of concepts, the two are rather similar when it comes to measuring national output and the rate of growth. Ivanov argues that the MPS under the Soviet practice tended to exaggerate growth not because of different concepts, but because of methodological problems such as inadequate deflation due to poor price data, incomplete coverage of unobserved economy, improper overpricing of new or modified products, and other flaws and gaps in the primary data. Problems in measuring price changes remain at the centre of his concerns. He argues that the deterioration of quality widely observed in the former CPEs should be measured as a decrease in volume, and he also highlights the institutional problems of the reporting system that motivated data fabrication by enterprises. Whether MPS contains an inherent upward bias in measuring output growth is debatable, although in practice these problems have plagued the former CPEs and are inherited in transition economies including China. While China's NBS has been working hard to reconstruct its historical data, in Ivanov's view these problems are major obstacles to any retrospective adjustment of national accounts data in CIS countries.

The papers by Cao, Ho, Jorgensen, Ren, Sun and Yue, and by Chen, Wu and van Ark, focus on industry-level total factor productivity (TFP) and labor productivity and compensation measurement, respectively. Data problems still remain the centre of the concerns although the authors do not directly challenge the given national totals. All of the problems involved in measuring China's national income and growth discussed above affect the measurement of factor input and output and hence productivity at the industry and province levels. However, given limited data, it is difficult to identify the problems in a coherent system that integrates national, industrial and regional accounts. The two papers have different focuses and hence different measurement problems. Cao *et al.* attempt to comprehend the industry-level input and output and hence productivity performance in an annual national input-output framework, whereas Chen *et al.* concentrate on changes in manufacturing labor productivity and compensation using data from census-based industry-by-province output and employment accounts.

Studies of the magnitude and sources of China's rapid post-reform growth have not reached any agreement among economists largely due to data problems. The analysis conducted by Cao *et al.* makes an ambitious attempt to account for input contributions, but also to investigate the effect of restructuring of the economy from agriculture to manufacturing and services—an issue that relates to how estimates of aggregate GDP growth may be reconciled with industry-level

estimates. The authors use the methodology developed in accounting for U.S. economic growth in earlier work by Jorgenson and his associates to account for Chinese economic growth, both at the sectoral level and at the aggregate level using a time-series of input–output tables that is part of a consistent set of China’s national accounts, and using detailed labor data from the micro-level surveys.

Their estimate of aggregate TFP growth for the period 1982–2000 of 2.5 percent per annum lies between the existing estimates of 1.1–1.4 percent and the high estimates of 4–5 percent, but is close to Maddison’s estimate of 2.95 percent for 1978–2003. However, their results also suggest that the main contribution to TFP growth comes from the Domar-weighted secondary industry TFP, while the reallocation of labor has a negligible effect. The efficiency improvement due to the reallocation of capital is positive in the 1980s, but negative in the 1990s, while GDP growth was driven by technical progress and efficiency improvements in 1982–94, but in other periods it is mainly driven by the accumulation of capital.

The nature of the Jorgenson methodology is highly data demanding and although the data set used is a definite improvement over those used in previous studies, the authors acknowledge that there are still weaknesses in measuring both input and output variables. The difficulties in estimating capital input are the most challenging, due to the lack of good deflators for the different assets in the earlier periods, the lack of good data on land input, and the lack of China-specific depreciation rates. Given that the role of capital accumulation in China’s growth is dominant, changes in these measures will surely result in changes in the estimated contribution of capital input and thus the contribution of TFP. The authors also point out that the measurement of labor input suffers from problems, including the lack of good annual industry-level estimates in the years prior to 1990, the lack of data on hours worked, and the lack of information about the self-employed. These problems are all related to shortcomings in China’s national accounts as well as in the industrial and labor statistics that are supposed to be coherently related to the national accounts.

The paper by Chen, Wu and van Ark investigates China’s productivity performance from the perspective of the growth of labor compensation relative to labor productivity at the industry level across provinces. In seeking to establish whether the growth of Chinese manufacturing has been able to maintain a stable, or even achieve a decline in unit labor costs (ULC), the authors construct an industry-by-region data set for 28 industries and 29 provinces using data from China’s third industrial census in 1995 and the first economic census in 2004. Their findings show that at the aggregate level, labor productivity growth was generally much faster than that of average labor compensation and hence resulted in a significant decline in ULC in Chinese manufacturing over 1995–2004. This is generally the case for all regions. However, less developed regions exhibited stronger productivity growth relative to the increase in labor compensation than more developed regions, leading to a convergence in ULC levels across regions over the period. Using logit regression analysis, the authors show that labor-intensive industries are more likely to converge in terms of labor productivity, labor compensation and ULC, whereas capital/skill-intensive industries tended to diverge. This is further confirmed by more complex regression modeling, which suggests



that misallocation of resources due to market imperfections or institutional barriers is likely to be the main factor behind the divergence of ULC in capital/skill-intensive industries.

However, for such a measurement based exercise, a primary question will be how the key variables are measured and constructed. First, official statistics on the real growth of value added may be exaggerated (as argued by Maddison among others). This problem is highly relevant to the measure of gross value added used in the study because if it is overestimated, other things being equal, labor productivity will be exaggerated and hence ULC will be underestimated. Second, official statistics on labor compensation could be understated because payment in kind may not be fully counted and state enterprises had strong incentives to hide labor compensation under other cost items. Finally, echoing an issue addressed by Cao *et al.*, a proper measure of effective employment is important for an accurate productivity assessment.

#### MICRO MEASUREMENT ISSUES AND ANALYSIS

Issues associated with the impact of transition on inequality overall, and on the extent and profile of poverty in particular has attracted great attention over the last two decades. Much has been made of the impact of the economic growth that has been stimulated by the deregulation of markets on the living standards of everyone including the poor, with the result that large inroads have been made in many countries in reducing the numbers in absolute poverty. In its *2000 Asian Development Report*, the Asian Development Bank (ADB) described China's record in poverty reduction in the two decades to 1998 as "nothing short of remarkable," and many other transition countries have received similar praise. At the same time, however, there has been an accumulation of evidence showing that inequality has been increasing rapidly—more rapidly than elsewhere in the region except in some of the Central Asian Republics and Russia—and this has been widely seen (by commentators both within China and externally) as posing a potential threat to social stability and hence to the foundation on which economic growth can build.

Reflecting the balance of papers presented at the conference itself, the focus of those included here is very much on China, although one of them compares China with India in terms of the distribution of earnings. The focus on China in part reflects the conference venue, but also the intense interest shown by scholars around the world in developments in inequality and poverty in China. This interest also explains the allocation of all but one article in a recent issue of *The Review of Income and Wealth* (Series 53, Number 1, March 2007) to papers examining aspects of inequality and poverty in China. An additional factor that has contributed to the interest shown by researchers and policy makers in inequality and poverty in China is the expanding access and availability of household-level data. A range of datasets now allows trends and issues to be examined in depth, and papers that appear in this Special Issue attest to the benefits that this has generated in terms of increased understanding of the forces driving observed developments.

Despite this focus on China, the five papers that focus on microeconomic issues contain a wealth of information and analysis that will be of wide interest to

scholars and policy makers alike. In contrast with the macro papers, much less attention is devoted to data problems, although several of the authors note that a degree of caution should apply to their findings because of data limitations. Three of the papers concentrate on examining the extent and nature of inequality and poverty (one of them in a comparative context), while the remaining two consider the impact of policy—a topic about which little is currently known, but one that seems set to attract increasing attention as policy makers seek to alter outcomes.

The paper by Keidel sets the scene by noting that the official GDP statistics and data on rural incomes and consumption reveal increasingly large disparities in regional inequality. It follows that regional rural household income and consumption levels in China are diverging and have been doing so for at least two decades. However, this growing inequality has been accompanied by an extraordinarily rapid improvement in rural household income and consumption levels in all regions over both longer-term (1985–2005) and more recent (2000–05) periods. This leads Keidel to argue that regional disparities are less severe than consumption levels make them seem. When household savings rates are high and increasing—as has been the case in China over this period—slower consumption growth seems to indicate an expansion of a short- to medium-term cycle of saving for large expenditures, with the growing prevalence of such saving implying greater increases in well-being than static consumption levels would indicate. The paper argues more generally that the growing prevalence of such periodic or “transient” saving undermines the reliability of using consumption levels as a measure of shifts in poverty and well-being. There are also clear differences in the incidence of poverty between coastal and interior provinces that imply differences in well-being, especially when the poverty measure incorporates the revisions to the World Bank’s “dollar-a-day” poverty standard consistent with the December 2007 release of revised Chinese purchasing power parity statistics. The persistence of these regional differences will continue to provide incentives for voluntary labor migration from low-productivity areas to regions with higher-productivity and higher income and work opportunities, and reinforce their potential for enhancing China’s productivity and earned income growth for some time to come.

The paper by Bargain, Bhaumik, Chakrabarty and Zhao is one of the first comprehensive attempts to compare earnings in urban China and India over the recent period. While both economies have grown considerably, they have also exhibited significant differences in wage growth since the late 1980s. The extent of differences in the distribution of earnings is examined by estimating Mincer equations and performing Oaxaca–Blinder decompositions at the mean and at different points of the wage distribution using comparable data sets for the two countries. The wage differential in favor of Indian workers, observed in the middle and upper part of the distribution at the beginning of the observation period is shown to partly disappear over time. While the 1980s’ Indian premium is mainly due to higher returns to education and experience, a combination of price and endowment effects explains why Chinese wages have caught up, especially since the mid-1990s. The price effect is only partly explained by the observed convergence in returns to education, while the endowment effect is driven by faster increase in education levels in China and significantly accentuates the reversal of the wage gap in favor of this country for the first half of the wage distribution.



Gustafsson and Sai estimate the incidence of temporary and persistent poverty among ethnic minorities and the majority in rural China for the years 2000, 2001 and 2002 using a large sample covering 22 provinces. This is one of the first papers to examine ethnic differences in rural poverty, and to do so using a dynamic approach that distinguished between temporary and persistent poverty. Differences in both dimensions—ethnicity and persistence—have important implications for policy and the paper's findings represent an important advance of previous work. The estimates are based on the National Bureau of Statistics' low-income line, and indicate that whereas almost one-third of those belonging to an ethnic minority group experienced poverty during the three years studied, the corresponding proportion among the ethnic majority was only about half as high. However, this difference should not conceal the fact that in overall terms, the majority of the poor in rural China belong to the ethnic majority. The relatively high poverty rates for ethnic minorities in rural China are found to be due to higher rates of entry into the poverty pool than for the majority, while differences in exit rates across ethnicities are few. To a large extent, ethnic poverty differences can be attributed to differences in location, with both temporary and persistent poverty in rural China having a very clear spatial character; the determinants of persistent and temporary poverty differ due to location as well as household characteristics.

The focus of the paper by Anderson and Leo is on the impact of China's One Child Policy on child poverty and other contributors to child well-being. The policy, introduced in 1979, changed fundamentally the nature of both existing and anticipated marriage arrangements and influenced family formation decisions in many dimensions especially with respect to the number of and investment in children. The policy's introduction coincided with the commencement of major economic reform in 1979, and the trend toward greater urbanization, both of which may also have influenced the well-being of children. Using data from urban household surveys in China, the paper examines several aspects of the impact of these changes on the well-being of children, including the mobility status consequence for children. The analysis begins by comparing child poverty rates in urban China with those in Canada, the U.K. and urban India, and finds that both the extent and trend in child poverty are very different across the four countries, with children not being over-represented in the poverty group in urban China. The extent to which policy influenced investment in children is then examined by studying the way in which the relationship between the educational attainment of children and family characteristics changed within families formed prior to and after 1979. The findings indicate that the impact of household income and parental educational attainment increased significantly over time, with a positive gender effect whereby girls advanced more than boys. The authors apply new techniques for measuring mobility in order to observe the reduction in intergenerational mobility. This phenomenon is found to be particularly prevalent in the lower income quantiles, reinforcing a dynastic notion of poverty.

The final paper, by Gao, Garfinkel and Zhai, explores the impact of policy at a more disaggregate level and in a more direct way. Its focus is on the impact of the Minimum Living Standard Assistance (MLSA) scheme that has served as a last resort for China's urban poor since its introduction in the early 1990s. Using

national household survey data, the study develops a framework for estimating the effectiveness and efficiency of the MLSA, and uses this framework to provide updated evidence on the participation rate, receipt amount, and anti-poverty effectiveness of the program. The authors show that families eligible for MLSA benefits make up 2.3 percent of the urban population, but only about half of them are actual beneficiaries. Cross-city variations in the overall generosity of MLSA entitlements and in benefit levels for specific household types within cities are both shown to be positively correlated with the program participation rate and the amounts received by different households. The benefits paid under MLSA are shown to lower the poverty rate somewhat, but also to substantially reduce the poverty gap and hence the severity of poverty experienced by eligible participants. Nevertheless, the poverty reduction role of MLSA is restricted by its partial coverage and delivery. This implies that poverty remains a serious problem for MLSA's target population, although the anti-poverty effectiveness of the program can be strengthened by extending its coverage and improving the delivery of benefits, as well as by paying special attention to the needs of disadvantaged subgroups.

This final paper highlights an issue that is likely to be of increasing importance in all transition economies—the need to validate household data against benchmarks derived from the National Accounts and other (often administrative) sources. As household-level studies become more technically sophisticated and policy-focused, the requirements on the accuracy and consistency of the microdata will inevitably increase. The earlier papers in this volume reveal how the accuracy of macrodata has been a source of an ongoing debate that has produced a number of important insights and generated many improvements. We are now at a point where the same degree of scrutiny should be applied to the survey data on which many studies of policy, inequality and policy impact rely.

#### CHALLENGES AND PROSPECTS

Together these papers reveal the extent of progress that has been made in understanding and responding to the challenges that have been experienced in transition economies in general, and in China in particular. In order to respond appropriately to a problem, it is first necessary to measure its dimensions; these papers show that significant progress has been made in measuring income and wealth at both the economy-wide (macro) and household (micro) levels. However, much remains to be done to improve the accuracy of the data that are currently available and to expand their coverage.

These issues are not restricted to the transition economies, but are facing all countries in the face of rapid, ongoing economic and social change. One issue that warrants particular attention is the need to better integrate the national accounts with household survey data. This too is an issue that has general applicability, but it represents a specific challenge in the transition economies as they seek to consolidate on past achievements and build the platform for a sustainable future characterized by economic prosperity and social stability.