

**WP 2008-18**  
**August 2008**



# Working Paper

Department of Applied Economics and Management  
Cornell University, Ithaca, New York 14853-7801 USA

## **REGIONAL INEQUALITY IN CHINA: AN OVERVIEW**

**Shenggen Fan, Ravi Kanbur, and Xiaobo  
Zhang**

It is the Policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age or handicap. The University is committed to the maintenance of affirmative action programs which will assure the continuation of such equality of opportunity.

# **Regional Inequality in China: An Overview\***

**By**

**Shenggen Fan**  
**International Food Policy Research Institute**  
<http://www.ifpri.org/srstaff/FanS.asp>

**Ravi Kanbur**  
**Cornell University**  
[www.people.cornell.edu/pages/sk145](http://www.people.cornell.edu/pages/sk145)

**Xiaobo Zhang**  
**International Food Policy Research Institute**  
<http://www.ifpri.org/srstaff/ZhangX.asp>

**August, 2008**

## **Contents**

1. Introduction
  2. Spatial Inequality: A Global Perspective
  3. Trends in Chinese Regional Inequality
  4. Explanations and Policy Responses
  5. Conclusion
- References

## **Abstract**

China's spectacular growth and poverty reduction has been accompanied by growing inequality which threatens the social compact and thus the political basis for economic growth and social development. The regional dimension of inequality—rural/urban, inland/coastal and provincial—dominates in a country as large as China, and especially with its particular history. The three of us have been researching Chinese regional inequality for over a decade. In a series of papers which have been published in peer reviewed journals, we have been involved in a systematic investigation into the nature and evolution of regional inequality in China. The object of this volume is to bring together a selection of these papers by us and our co-authors, so that researchers and policy makers can have access to them in one place. This introduction provides an overview of the volume.

---

\* Introduction to Shenggen Fan, Ravi Kanbur and Xiaobo Zhang (eds.) *Regional Inequality in China: Trends, Explanations and Policy Responses*, Routledge, forthcoming. The Table of Contents is given in the Appendix.

## 1. Introduction

China's spectacular growth and poverty reduction has been accompanied by growing inequality which threatens the social compact and thus the political basis for economic growth. Chinese policy makers have realized the importance of the problem and have launched a series of investigations and policy initiatives to address the issues. The regional dimension of inequality—rural/urban, inland/coastal and provincial—dominates in a country as large as China, and especially with its particular history. Not surprisingly, regional inequality has come to loom large in the policy debate in China.

The policy debate has been informed by, and to some extent instigated by, a parallel analytical literature which has quantified the magnitude of the problem and identified recent trends, offered explanations based on rigorous analysis, and proposed policy interventions in light of the facts and understanding. The three of us have been researching Chinese regional inequality for over a decade. In a series of papers which have been published in peer reviewed journals, we have been involved in a systematic investigation into the nature and evolution of regional inequality in China. Although by its very nature such a claim is difficult to substantiate, we like to think that our research, as part of the broader contribution from the research community, has had a policy impact. The policy discourse in China on regional inequality, and on inequality generally, is very different now than even a decade ago.

The object of this volume is to bring together a selection of these papers by us and our co-authors, so that researchers and policy makers can have access to them in one place. This introduction provides an overview of the volume. We begin in Section 2 with a brief conceptual consideration of spatial inequality, and report on what has been happening to it globally, to set the context for China's experience. Section 3 is devoted to trends in regional inequality in China as discussed in Part I of the volume, while Section 4 focuses on explanations and policy responses, Part II of the volume. Section 5 concludes.

## 2. Spatial Inequality: A Global Perspective<sup>1</sup>

Regional inequality—inequality between different regions—is and is now recognized to be a major issue for China's policy makers. But such inequality, or spatial inequality more generally—inequality between spatially distinct areas within a country—is equally a major issue for all countries and for their policy makers. Wars have been fought over the issue at one extreme, while the normal politics of a country is undoubtedly affected by spatial disparities in that country. But what exactly is this spatial inequality? How is to be measured? What has been happening to it globally in the last two decades? What explains the patterns of evolution? And what can policy do about it? These are questions that face not just an analysis for China, but for any country. We begin by taking an abstract and a global perspective on the issue, to set the background for our China specific discussion in the next two sections.

---

<sup>1</sup> This section draws on Kanbur and Venables (2007).

These questions were addressed for a global setting in Kanbur and Venables (2007), which reported on a major project documenting and analyzing trends in spatial inequality in the world. To take the first question, an economic approach to spatial inequality would quite naturally locate it in patterns of income inequality across individuals. Thus, for example, if individuals in a country can be assigned to mutually exclusive and exhaustive spatial groupings in that country (“regions”), then income inequality across individuals can be decomposed into that which can be accounted for by the fact that mean income differs across regions, and that which can be accounted for by the fact that even around the mean of any given region there is still variation in individual incomes. The former is known as the “between group” component of inequality, and the latter as the “within group” component of inequality. The between group component of inequality thus has some claim to be labeled as “spatial inequality”.

However, this conceptualization effectively weights the mean income of a region by its population share, with the result that changes in the mean income of a small region do not have a big impact on overall spatial inequality. While this is a natural implication of the individualistic perspective in standard economic theory of inequality measurement, as Kanbur (2006) has argued it may not be an accurate reflection of how spatial inequality is actually perceived and experienced on the ground, where group means may carry more significance. Thus for some purposes the evolution of unweighted means may be more appropriate, for example when comparing rural-urban disparities, or disparities in a country where the regional divide aligns with ethnic or religious divides. Both of these approaches are used in the papers represented in this volume.

However it is measured, what has been happening to spatial inequality within countries in the world? In the Kanbur and Venables (2007) project, a large number of authors wrote papers on different dimensions of spatial inequality, with data from different sources. Information was collected on spatial disparities (in income, primarily, but also on other measures of well being like education and health) in 58 developing economies. For 26 of these countries, information was presented on dynamics of spatial inequality, across various periods over the last two decades. The conclusions are quite striking, and set the frame for our China discussion. Spatial disparities are high, and rising. Whether in Africa (for example, Sahn and Stifel, 2003), in Latin America (for example Escobal and Torero (2005) for Peru and Garcia-Verdu (2005) for Mexico), in Asia (Friedman (2005) for Indonesia), in the transition economies (for example, Anderson and Pomfret (2005) for Tajikistan or Jesuit and Smeeding (2005) for the Czech Republic, Hungary, Poland and Russia), and for many other cases, the studies show that spatial inequalities are high, and they have been rising. China was indeed one of the countries studied (Chapter 4, this volume), and the results were similar—more on this in the next section.

What are the causes of high and rising spatial disparities? A major factor turns out to be public infrastructure, the location of which often strengthens (rather than mitigates) initial natural advantages and agglomeration economies. For example, Christiaensen, Demery and Paternostro (2005) show the importance of transport connections in explaining regional poverty and its evolution in Africa. Lall and Chakraborty (2005) discuss lagging regions in India, and argue that there are strong pulls on firms to move away from these

regions to regions already more advanced, thereby setting in motion a cycle of increasing spatial inequality in economic activity.

The second major factor that seems to be associated with growing spatial inequality in increasing openness to international trade. For example, for Mexico, Rodrigues-Pose and Sanchez-Reaza (2005), and Garcia-Verdu (2005) find that regional convergence was slower after NAFTA (the North American Free Trade Agreement) was introduced, and perhaps regional convergence even switched to divergence. For China, Kanbur and Zhang (Chapter 4, this volume) find that greater openness is associated with higher spatial inequality according to their measure—this will be discussed in the next sections. For Vietnam, Jensen and Tarp's (2005) simulation exercise also indicate an association between trade liberalization and rural-urban inequality. Again, these are themes that are present in China and are taken up later in this volume and in this overview.

Finally, the authors in the Kanbur and Venables (2007) global project on spatial inequality discuss possible policy responses. None of the authors support reducing openness to trade as a policy response. But two key policy responses with analytical support are (i) development of economic and social infrastructure in lagging regions and (ii) reducing barriers to migration between fast growing and lagging regions. For China, Ravallion (2005) finds support for poor-area development programs the government has been promoting, and some of the papers in this volume complement that finding. For Africa, Christiaensen, Demery and Paternostro (2005) also argue for public infrastructure (roads in Ethiopia and electricity in Uganda) as key determinants of poverty reduction in remote locations. Similarly, for China (papers in this volume), for Brazil (Timmins, 2005) and for Chile (Soto and Torche, 2005), for example, impediments to migration are identified as key factors in maintaining spatial inequality.

Thus high and rising spatial inequality is a global phenomenon. China's experience in addressing this issue is thus not just of significance for China—it may also have lessons for the rest of the world.

### **3. Trends in Chinese Regional Inequality**

Part I of this volume is devoted to a collection of our papers that measure regional inequality in China and establish its trends. The first three of these papers use a decomposition methodology to quantify spatial inequality as the between group component of interpersonal inequality.

Chapter 2 of the volume, "Which Regional Inequality: The Evolution of Rural-Urban and Inland-Coastal Inequality in China from 1983 to 1995," was the first paper to be published out of all the papers in his volume. It was worked on in the late 1990s and published in 1999 and contributed to the first wave of research on spatial disparities in China. It introduced the decomposition of the Theil index of inequality as a way of capturing different dimensions of spatial inequality. Since Chinese provincial data provide information on mean consumption for rural and urban areas by province, but no

information on the distribution around these means, interpersonal inequality is calculated at the national level assuming that each population (rural and urban in each province) is clustered at its mean. The estimated inequality is thus a lower bound on the true interpersonal inequality. It is, in fact, the between group component of the true overall interpersonal inequality, and as such is a measure of spatial inequality in China. But the estimated inequality can in turn be decomposed by rural and urban groups across provinces, and by provinces in different clusters—given Chinese concerns we chose inland-coastal as the key provincial divide. This decomposition allows us to examine in greater depth the evolution of spatial inequality in China.

With this framework the paper presents the evolution of different components of inequality, specifically the inland-coastal dimension and the rural-urban dimension, for 1983-1995. It demonstrates the dramatic increase in spatial inequality in China during these years. It also shows that although the rural-urban component of spatial inequality is higher than the inland-coastal component, and both have been rising, the latter has been rising much faster over this period. It thus raises the question, without in any way diminishing the significance of rural-urban gap within each of the provinces, of the growing disparities between the provinces themselves, especially between inland provinces on the one hand and coastal provinces on the other—a recognition that is quite widespread today in Chinese policy circles.

The next paper in the volume, Chapter 3, shows how the Chinese case was used to make a contribution to the general literature on inequality measurement. In the broader literature, concerns were expressed that standard measures of inequality would not capture “polarization”, by which was meant the emergence of a bi-modal distribution—large numbers of people at the very top and at the very bottom, with a “disappearing middle class.” In this paper, “What Difference Do Polarization Measures Make? An Application to China,” two advances were proposed. Firstly, a different conceptualization of polarization was introduced, based on predetermined groups (in this case, regions). It was argued that the degree of polarization between groups in these settings could in fact be captured by the between group component of overall inequality. Secondly, however, the paper posed an empirical question—did any of this make any difference? Would the trends in inequality be overturned by any of the polarization measures—those in the literature, and that proposed in the paper? It turned out that in the Chinese case, over this period, all measures moved in the same direction—inequality as well as polarization rose sharply in China during this period.

Chapter 4 of the volume, “Fifty Years of Regional Inequality in China: A Journey Through Central Planning, Reform and Openness,” extends the time period of investigation to a half century—stretching back to 1952 in the pre-reform period and forward to 2000. This allows a historical perspective on the evolution of regional inequality in China, and further permits time series econometrics on the determinants of the evolution. It is shown that there have been three peaks of inequality in the last fifty years, coinciding with the Great Famine of the 1950s, the Cultural Revolution of the 1960s, and the period of openness and global integration of the late 1990s. In the post reform period there was a fall in inequality from the Cultural Revolution peak as the agrarian reforms of the late 1970s

and early 1980s improved rural incomes. In fact, econometric analysis confirms that focus on agriculture (as measured by the inverse of the ratio of heavy industry to gross output) reduces spatial inequality. Interestingly, in the post-reform period, the degree of decentralization, as measured by the share of local government expenditure in total government expenditure, is associated positively with increasingly inequality—the reasoning being that this allows the better performing provinces, especially those on the coast, to enter a virtuous cycle by using their higher revenues to invest in infrastructure, thereby attracting more investment and further increasing the revenue. Finally, the paper also establishes an association between a measure of openness and spatial inequality, in common with the global pattern identified in the previous section.

The next two papers in this part of the volume depart from the first three papers, which focused on the evolution of income inequality in a broad national context. Chapter 5 stays with income but focuses on poverty in urban areas, while Chapter 6 stays with regional inequality at the national level but turns the spotlight on non-income dimensions of wellbeing.

Chapter 5, “Emergence of Urban Poverty and Inequality in China: Evidence from Household Survey” uses a dataset from an urban household survey for 28 provinces for 1992 and then each year 1994-1998. In each province, one representative city with a sample size from 50 to 150 households is selected, giving a total sample size of around 3,600 households for each of the six years studied. It is shown that the incidence of urban poverty declined from 1992 to 1995, but increased from 1996 to 1998, when major urban reforms were launched. The western region has the highest concentration of urban poverty, and the income gap between the region and rest of China has been widening over time. A further decomposition analysis shows that rapid economic growth has been the major force behind reduction in urban poverty, but the poverty reduction impact would have been even greater if worsening income distribution had been avoided. This paper also draws some policy conclusions. First, the current strategy of western development should broaden its focus to include the urban poor in the region. Second, in addition to promoting growth, the government should also speed up the process of establishing a social safety net for the vulnerable groups. Third, since the urban reforms have led the poor to spend a higher proportion of their incomes on education, health care and housing, expanding access to basic education and healthcare will enable the vulnerable to share the prosperity offered by market reforms.

Chapter 6, “Spatial Inequality in Education and Health Care in China,” looks at regional inequalities in achievements in these key non-income indicators. In the pre-1978 period, basic education and health care were widely available, even though rural facilities were worse than in urban areas. Since 1978, however, the state has withdrawn considerably at the local and central level. What has been the impact? The paper looks at inequality in a number of education and health indicators for China. While the illiteracy rate has decline steadily between 1981 and 2000, there nevertheless exist large rural-urban and male-female gaps—the rural illiteracy rate was more than double the urban one, and female illiteracy was also more than double the male rate. The paper further calculates a measure of regional inequality in illiteracy using the Theil index. Regional inequality in education has increased



across the rural-urban and the inland-coastal divide. Health inequality is analyzed using indicators like the infant mortality rate (IMR). While the IMR has declined for China as a whole, regional inequality increased from 1981 to 2000. The increasing inequality in this outcome variable is underpinned by increasing inequality in input variables like healthcare personnel or hospital beds per thousand persons. Overall, then, the story for non-income indicators is consistent with that for income--strong improvements in national averages accompanied by widening regional disparities.

#### **4. Explanations and Policy Responses**

The papers in Part I of this volume are devoted primarily to identifying and quantifying the trends in Chinese regional inequality. But elements of explanation and policy response are already present in these papers. Moreover, the global literature also suggests a number of key drivers of spatial inequality. The important issues, as identified in the global literature and in the papers in Part I of this volume are: (i) trade and openness, (ii) public infrastructure, and (iii) central and local social expenditures. The papers in Part II of the volume take up these themes.

Chapter 7 begins the second part of the volume by emphasizing the importance of the above three factors—it does so by showing that an obvious potential determinant of regional development—natural resource abundance in a region--does not in fact lead to better performance in that region. The paper, “Resource Abundance and Regional Development in China,” defines resource intensity as the ratio of resources production to total GDP, and uses a panel data set at the provincial level to show that provinces with abundant resources perform worse than their resource poor counterparts in terms of per capita consumption growth. The rapid economic growth in the coastal region coupled with increasing domestic market integration has stimulated the demand for natural resources, which are mostly produced in the interior regions. In principle, the resource-rich regions should benefit from higher resource price. However, because of the institutional arrangements on the property rights of natural resources, most gains from the booming resources have been captured either by the government, state owned enterprises, or investors. The windfall of natural resources has more to do with government consumption than household consumption. Moreover, greater revenues accruing from natural resources bid up the price of non-tradable goods and hurt the competitiveness of local economy. The resource curse thus appears to operate within China, and the institutional basis of rural poverty, in particular, is deep.

With this background, the next two chapters take up the issue of trade and regional inequality in China. Chapter 8, “How Does Globalization Affect Regional Inequality Within A Developing Country? Evidence from China,” develops an empirical method for decomposing the contributions of trade and foreign direct investment to regional inequality in China and applies it to provincial data for the period 1986-1998. The basic story that emerges is that domestic and foreign investment has been increasingly concentrated in the coastal regions, and this is the driver of growing regional inequality. Even after controlling for other factors such as regional differences in education, the effect remains. Variations in

the degree of globalization (foreign trade and foreign capital) account for almost a fifth of the increase in regional inequality. These findings are particularly important given China's accession to the World Trade Organization (WTO). If the results of Chapter 8 are any indication, then greater global integration will lead to widening regional disparity within China, requiring countervailing policy responses.

This point is developed in greater detail, but with a focus on agriculture, in Chapter 9, "China's WTO Accession: Impacts on Regional Agricultural Income—A Multi-Region, General Equilibrium Analysis." The paper develops a regional computable general equilibrium (CGE) model with the 1997 Social Accounting Matrix (SAM) for China, disaggregated using the Global Trade Analysis Project (GTAP) database. The crop sector, for example, is split into nine sectors—wheat, rice, other cereals, vegetables, fruits, soybeans, other oilseeds, cotton, and other crops. Agriculture production data are disaggregated into seven regions using information in *China Statistical Yearbook*, *China's Agricultural Statistical Materials*, and a number of other sources. With the model, a number of policy exercises are carried out. For example, the US-China agreement says China will reduce its tariff rate on agricultural imports from 22 percent to 17.5 percent. What would be the impact of such a policy shift? These and other exercises are carried out in the paper. The results show that total welfare will improve but regional income gaps will widen. The agricultural sector will suffer if only agricultural trade is liberalized. Lifting both agricultural and non-agricultural trade barriers will benefit farmers at the national level. However, rural income will increase less than urban income, implying that the rural-urban income gap will widen further. Among the regions, farmers in China's least-developed rural areas will benefit little or even suffer because agriculture, especially traditional agriculture, is still an important source of their livelihood.

Given that China has adopted a globalizing strategy for development, and that this has certainly delivered in terms of growth and overall poverty reduction, what can be done to address the growing regional imbalances that such openness seems to be associated with? One possible answer is investment in public infrastructure, which can be both an explanation for regional inequality and, therefore, part of a strategy of containing rising regional inequality. The next three chapters of the volume are devoted to this topic, focusing in particular on rural development.

Chapter 10, "Infrastructure and Regional Economic Development in Rural China," uses the 1996 Agricultural Census. This provides detailed data on rural infrastructure, education, and science and technology. Combining this with other official sources, it relies on a traditional source accounting approach to identify the role of rural infrastructure and other public expenditures in explaining productivity differences among regions. It is shown that rural infrastructure and education play an important role in explaining the difference in rural nonfarm productivity. Since the rural nonfarm economy is a major determinant of rural income, investing more in rural infrastructure is key to increasing the overall income of the rural population. Second, lower productivity in the Western region is explained by its lower level of rural infrastructure, education, and science and technology. A different technique is used to address the same issue in Chapter 11, "Public Investment and Regional Inequality in China." Using a provincial level data set for the period 1978-1995 in rural

China, a model is estimated that enables the impacts on regional inequality of different types of public investments in each of three regions to be quantified. Regional variations in the impact of public investments on regional inequality are large. Increasing public investment in the less developed western region will lead to a decline in regional disparity. In contrast, if the government continues to favor the coastal region in its investment strategy, regional disparities will widen further. The paper also introduces a more disaggregated perspective on public investment. For example, investments in education and agricultural R&D in the western region are the two most powerful ways of reducing regional inequality.

Chapter 12 takes up the themes of the previous two chapters and develops a comprehensive analysis of the role of different types of government expenditure on rural growth and poverty. Using a wide range of provincial data over the past quarter century, it builds and estimates a simultaneous equations econometric model to calculate economic returns, poverty reduction, and impact on regional inequality of different categories of public expenditure. It is shown that productivity is enhanced and poverty is reduced by increased expenditures for research and development, irrigation, education, roads, electricity and telecommunications. Moreover, while for the first decade of reforms the reforms themselves were more important for growth and poverty reduction, since the mid 1980s onwards public investment is shown to be the dominant factor explaining both growth and reductions in poverty. What is equally interesting, however, is that different categories of investments have different payoffs, which in turn differ across regions. Education has the biggest payoff for poverty reduction and growth in rural areas. The impact of rural telecommunications, electricity and roads was also substantial, working through nonfarm employment and rural wages. Thus road investment, for example, had the second largest return to growth in the nonfarm economy and in the rural economy overall. The regional specifics confirm the results of the previous chapter—the poverty reduction effects of education, agricultural research and development, and infrastructure is particularly high for the western region of China. The policy implications of this analysis are direct and strong. If the government wishes to manage growing regional inequality in China, then investing in public infrastructure in the lagging regions will have to be an important policy priority.

The balance between central and local responsibilities in providing public goods services is a key policy issue for China. The final two chapters in the volume show that decentralization plays a central role as a determinant of regional inequality, as already suggested by the analysis in Chapter 4. Chapter 13, “Fiscal Decentralization and Political Centralization in China: Implications for Growth and Inequality,” characterizes China’s fiscal system as one in which the fiscal system is largely decentralized but the governance structure is centralized with many top-down mandates. The paper uses a nationwide panel data set at the county level to analyze the impact of fiscal decentralization on spatial inequality. The county level public finance data are from 1993 to 2000 and come from the *China County Public Finance Statistical Yearbook*. Allowing for missing data, the analysis is based on a panel of 1,860 observations over this period. Due to large differences in initial economic structures and revenue bases, the implicit tax rate and fiscal burdens to support the functioning of local government vary significantly across jurisdictions. Regions initially endowed with a broader nonfarm tax base do not need to rely heavily on preexisting or new

firms to finance public goods provision, thereby creating a healthy investment environment for the nonfarm sector to grow. In contrast, regions with agriculture as the major economic activity have little resources left for public investment after paying the expenses of bureaucracy. Consequently, differences in economic structures and fiscal burdens may translate into a widening regional gap.

Chapter 14, the final chapter in the volume, “Social Entitlement Exchange and Balanced Economic Growth,” further explores the implications of rigidities in local governance structures, where the size and functions at lower levels are closely related to those in the upper levels, with little relation to economic development. As a result, under fiscal decentralization, the regional fiscal burdens to carry out various central mandates and regulations have become increasingly uneven. This has led to the underprovision of public goods in less developed regions, thereby widening inequality. The paper argues that the large regional differences also imply opportunities for regions to trade social entitlements so as to increase both efficiency and equity. The latest innovations in land development right transfers in the coastal provinces and the use of police officers from the same regions as local migrants to fight crime in the coastal provinces show the feasibility of social entitlement exchanges. Institutional reform and innovation is thus identified as a key policy response to regional inequality. The particular reform measures can be heterodox and context specific.

## **5. Conclusion**

The chapters in this volume have attempted to identify, quantify, and explain trends in Chinese regional inequality. Despite fast growth and falling poverty, regional disparities are increasing. If China wishes to continue along the current globalizing path to development, with the undoubted returns it has brought for growth and poverty reduction, and if at the same time it wishes to manage and mitigate widening regional disparity, a number of policy approaches are suggested by the papers in this volume. Prominent among these are public investment in the lagging regions, making migration easier to the fast growing regions, and institutional innovation to improve the performance of fiscal decentralization. Targeted social protection should also be used to help the poor in short run to meet their immediate needs and to help them to participate in the growth process in the long run. Details on each of these dimensions are provided in the chapters. But this is the overall stance that will be needed to ensure that growing regional inequality does not end up as a break on Chinese development.

## References

- Anderson, Kathryn, and Richard Pomfret. 2005. "Spatial Inequality and Development in Central Asia." In Ravi Kanbur, Anthony J. Venables and Guanghua Wan (editors), *Spatial Disparities in Human Development: Perspectives from Asia.*
- Christiansen, Luc, Lionel Demery and Stefano Paternostro. 2005. "Reforms, remoteness and Risk in Africa: Understanding Inequality and Poverty During the 1990s." In Ravi Kanbur and Anthony J. Venables (editors), *Spatial Inequality and Development.* Oxford University Press. January.
- Escobal, Javier, and Maximo Torero. 2005. "Adverse Geography and Differences in Welfare in Peru." In Ravi Kanbur and Anthony J. Venables (editors), *Spatial Inequality and Development.* Oxford University Press. January.
- Forster, Michael, David Jesuit and Timothy Smeeding. "Regional Poverty and Income Inequality in Central and Eastern Europe: Evidence form the Luxembourg Income Study." In Ravi Kanbur and Anthony J. Venables (editors), *Spatial Inequality and Development.* Oxford University Press. January.
- Friedman, Jed. 2005. "How Responsive is Poverty to Growth? A Regional Analysis of Poverty, Inequality and Growth in Indonesia, 1984-99." In Ravi Kanbur and Anthony J. Venables (editors), *Spatial Inequality and Development.* Oxford University Press. January.
- Garcia-Verdu, Rodrigo. 2005. "Income, Mortality, and Literacy Distribution Dynamics Across States in Mexico: 1940-2000." *Cuadernos de Economia.* Volume 42, Number 42, May, pp 165-192.
- Jensen, Henning Tarp, and Finn Tarp. 2005. "Trade Liberalization and Spatial Inequality: A Methodological Innovation in a Vietnamese Perspective." *Review of Development Economics.* Volume 9, Number 1, February, pp 69-86.
- Kanbur, Ravi. 2006. "The Policy Significance of Inequality Decompositions." *Journal of Economic Inequality.* Volume 4. No. 3. pp 367-374.
- Kanbur, Ravi and Anthony J. Venables. 2007. "Spatial Disparities and Economic Development," in D. Held and A. Kaya (eds.) *Global Inequality,* Polity Press, 2007.
- Lall, Somik Vinay, and Sanjoy Chakravorty. 2005. "Industrial Location and Spatial Inequality: Theory and Evidence from India." *Review of Development Economics.* Volume 9, Number 1, February, pp 47-68.
- Ravallion, Martin. 2005. "Externalities in Rural Development: Evidence for China." In Ravi Kanbur and Anthony J. Venables (editors), *Spatial Inequality and Development.* Oxford University Press. January.

Rodriguez-Pose, Andres, and Javier Sanchez-Reaza. 2005. "Economic Polarization Through Trade: Trade Liberalization and Regional Inequality in Mexico." In Ravi Kanbur and Anthony J. Venables (editors), *Spatial Inequality and Development*. Oxford University Press. January.

Sahn, David, and David Stifel. "Urban-Rural Inequality in Living Standards in Africa." *Journal of African Economies*. Volume 12, Number 1, December, pp 564-597.

Soto, Raimundo, and Aristides Torche. 2004. "Spatial Inequality, Migration and Growth in Chile." *Cuadernos de Economia*. Volume 41, Number 124, December, pp 401-424.

Soto, Raimundo, and Aristides Torche. 2004. "Spatial Inequality, Migration and Growth in Chile." *Cuadernos de Economia*. Volume 41, Number 124, December, pp 401-424.

Timmins, Christopher. 2005. "Estimable Equilibrium Models of Locational Sorting and Their Role in Development Economics." *Journal of Economic Geography*. Volume 5, Number 1, January, pp 59-83.

## Appendix

### Regional Inequality in China: Trends, Explanations and Policy Responses

Edited By

Shenggen Fan

Ravi Kanbur

Xiaobo Zhang

#### Table of Contents

##### Overview

1. Regional Inequality in China: An Overview  
*Shenggen Fan, Ravi Kanbur and Xiaobo Zhang*

##### Part I Trends in Regional Inequality

2. Which Regional Inequality: Rural-Urban or Coast-Inland? An Application to China  
*Ravi Kanbur and Xiaobo Zhang*  
  
[*Journal of Comparative Economics* 27: 686-701, 1999.]
3. What Difference Do Polarisation Measures Make? An Application to China  
*Xiaobo Zhang and Ravi Kanbur*  
  
[*Journal of Development Studies*, 37 (3): 85-98, February 2001.]
4. Fifty Years of Regional Inequality in China: A Journey Through Central Planning, Reform and Openness  
*Ravi Kanbur and Xiaobo Zhang*  
  
[*Review of Development Economics* 9 (1): 87-106, 2005.]
5. The Emerging Urban Poverty and Inequality in China: Evidence from Household Survey  
*Fang Cheng, Xiaobo Zhang and Shenggen Fan*  
  
[*China Economic Review*, 13 (4): 430-443, 2002.]
6. Spatial Inequality in Education and Health Care in China  
*Ravi Kanbur and Xiaobo Zhang*

[*China Economic Review*, 16: 189-204, 2005.]

## **Part II Explanations and Policy Responses**

7. Resource Abundance and Regional Development in China

*Xiaobo Zhang, Li Xing, Shenggen Fan, and Xiaopeng Luo*

[*Economics of Transition*, 16 (1): 7-29, 2008.]

8. How Does Globalization Affect Regional Inequality within a Developing Country? Evidence from China

*Zhang, Xiaobo and Kevin H. Zhang*

[*Journal of Development Studies*, 39 (4): 47-67, 2003.]

9. China's WTO Accession: Impacts on Regional Agricultural Income—A Multi-regional General equilibrium Analysis

*Xinshen Diao, Shenggen Fan and Xiaobo Zhang*

[*Journal of Comparative Economics*, 31: 332-351, 2003.]

10. Infrastructure and Regional Economic Development in Rural China

*Shenggen Fan and Xiaobo Zhang*

[*China Economic Review*, 15: 203-214, 2004.]

11. Public Investment and Regional Inequality in Rural China

*Xiaobo Zhang and Shenggen Fan*

[*Agricultural Economics*, 30 (2): 89-100, 2004.]

12. Reforms, Investment and Poverty in Rural China

*Shenggen Fan, Linxiu Zhang, and Xiaobo Zhang*

[*Economic Development and Cultural Change*, 52 (2): 395-422, 2004.]

13. Fiscal Decentralization and Political Centralization in China: Implications for Growth and Inequality

*Xiaobo Zhang*

[*Journal of Comparative Economics*, 34 (4): 713-726, 2006.]

14. Social Entitlement Exchange and Balanced Economic Growth

*Xiaopeng Luo and Xiaobo Zhang*



**OTHER A.E.M. WORKING PAPERS**

| WP No   | Title  | Fee<br>(if applicable) | Author(s)  |
|---------|--|------------------------|--|
| 2008-17 | China's Growth Strategies  |                        | Headey, D., Kanbur, R. and X. Zhang  |
| 2008-16 | Dairy Farm Management Adjustments to Biofuels-Induced Changes in Agricultural Markets                                    |                        | Schmit, T., Boisvert, R., Enahoro, D. and L. Chase   |
| 2008-15 | Cornell-SEWA-WIEGO 2008 Dialogue - Ahmedabad and Delhi Compendium of Personal and Technical Notes                        |                        | Bali, N., Basu, K., Bhorat, H., Carre, F., Chen, M., Fields, G., Jhabvala, R., Kanbur, R., Lund, F., Unni, J. and I. Valodia |
| 2008-14 | Ethanol Plant Investigation using Net Present Value and Real Options Analyses  |                        | Schmit, T., Luo, J. and L. Tauer   |
| 2008-13 | The Value of Private Risk Versus the Value of Public Risk: An Experimental Analysis of the Johannesson et al. Conjecture |                        | Messer, K., Poe, G. and W. Schulze   |
| 2008-12 | Social Preferences and Voting: An Exploration Using a Novel Preference Revealing Mechanism                               |                        | Messer, K., Poe, G., Rondeau, D., Schulze, W. and C. Vossler   |
| 2008-11 | Empirical Analysis of Stanchion and Parlor Milking Cost on New York Dairy Farms  |                        | Katsumata, K. and L. Tauer   |
| 2008-10 | Are Higher 529 College Savings Plan Fees Linked to Greater State Tax Incentives?   |                        | Bogan, V.  |
| 2008-09 | Microfinance Institutions: Does Capital Structure Matter?  |                        | Bogan, V.  |
| 2008-08 | Estimation of Treatment Effects of recombinant Bovine Somatotropin using Matching Samples*                               |                        | Tauer, L.  |
| 2008-07 | Attacking Poverty: What is the Value Added of a Human Rights Approach?   |                        | Kanbur, R.   |
| 2008-06 | Conceptualizing Economic Marginalization   |                        | Kanbur, R.   |
| 2008-05 | Poverty Effects of the Minimum Wage: The Role of Household Employment Composition  |                        | Fields, G., Han, B. and R. Kanbur  |
| 2008-04 | Poverty Dynamics: Measurement and Understanding from an Interdisciplinary Perspective                                    |                        | Addison, T., Hulme, D. and R. Kanbur   |

Paper copies are being replaced by electronic Portable Document Files (PDFs). To request PDFs of AEM publications, write to (be sure to include your e-mail address): Publications, Department of Applied Economics and Management, Warren Hall, Cornell University, Ithaca, NY 14853-7801. If a fee is indicated, please include a check or money order made payable to Cornell University for the amount of your purchase. Visit our Web site (<http://aem.cornell.edu/research/wp.htm>) for a more complete list of recent bulletins.