

# **Spatial Inequality and Development Overview of UNU-WIDER Project**

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## **Abstract**

The UNU-Wider project on ‘Spatial disparities in development’, directed by Ravi Kanbur and Anthony J. Venables, has analyzed evidence on the extent of spatial inequalities in over 50 developing countries. The peer reviewed papers published under the auspices of the project find that spatial inequalities are high, with disparities between rural and urban areas, and also between geographically advantaged and disadvantaged regions. In many countries such disparities are increasing, partly as a consequence of the uneven impact of trade openness and globalization. While there are efficiency gains from the concentration of economic activity in urban centers and in coastal districts, the associated regional inequalities are a major contributor to overall inequality. They are particularly worrying if they align with political or ethnic divisions. The broad outline of appropriate policy for managing high and rising spatial disparities is also clear. The case for policy interventions to ensure a more spatially equitable allocation of infrastructure and public services, and for policies to ensure freer migration, has been made powerfully in the papers in this project.

## **Background**

Amidst a growing concern about increasing inequality, the spatial dimensions of inequality have begun to attract considerable policy interest. In China, Russia, India, Mexico and South Africa, as well as most other developing and transition economies, there is a sense that spatial and regional disparities in economic activity, incomes and social indicators, are on the increase. Spatial inequality is a dimension of overall inequality, but it has added significance when spatial and regional divisions align with political and ethnic tensions to undermine social and political stability. Also important in the policy debate is a perceived sense that increasing internal spatial inequality is related to greater openness of economies, and to globalization in general.

But despite these popular and policy concerns, there is remarkably little systematic documentation of the facts of what has happened to spatial and regional inequality over the past ten to twenty years. Correspondingly, there is insufficient understanding of the determinants of spatial disparities in a globalizing world. As a result, the policy discussion tends to take place in something of an analytical vacuum. To address this gap the World Institute for Development Economics Research of the United Nations University (UNU-WIDER) launched its project, “Spatial Disparities in Human Development.” The project invited submissions of papers to a series of five conferences, covering broad methodological topics as well as with specific regional focus. All the papers selected for conference presentation were then further subjected to academic peer

review, and only those that passed these quality standards were published. In all, there are six such volumes, with more than 40 peer reviewed papers.<sup>1</sup>

A small number of the studies in this project are purely methodological, focusing on techniques for measuring and analyzing spatial inequality. But most of the studies are empirical in nature. Between them, the papers provide information on different dimensions of spatial disparities in no fewer than 58 developing and transition economies<sup>2</sup>. Some of the papers are country case studies. Others are comparative, covering several countries. Some countries (like China, Mexico or Russia) are covered by more than one paper, each emphasizing a different aspect of spatial inequality. For 26 countries, one or more papers make use of information from two points in time, allowing an assessment of the changes in spatial disparities and the determinants of this evolution.<sup>3</sup>

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<sup>1</sup> The volumes are as follows, in chronological order. (1) Ravi Kanbur and Anthony J. Venables (editors), *Spatial Issues in Africa*, Special Issue of the *Journal of African Economies*, Vol 12, No. 4 (December 2003). (2) Ravi Kanbur and Anthony J. Venables (editors), *Spatial Inequality and Development*, Oxford University Press, 0-19-927863-6 (January 2005). (3) Ravi Kanbur and Anthony J. Venables (editors), *Spatial Inequality and Development*, Special Issue of *Journal of Economic Geography*, Vol. 5, No. 1 (January 2005). (4) Ravi Kanbur, Anthony J. Venables and Guanghua Wan (editors), *Spatial Inequality and Development in Asia*, Special Issue of *Review of Development Economics*, Vol 9, No 1 (February 2005). (5) Ravi Kanbur, Luis F. Lopez Calva and Anthony J. Venables (editors), *Spatial Inequality in Latin America*, Symposium in *Cuadernos de Economia-Latin American Journal of Economics*, Vol 42, Nos 124 and 125 (December 2004 and May 2005). (6) Ravi Kanbur, Anthony J. Venables and Guanghua Wan (editors), *Spatial Disparities in Human Development*, United Nations University Press (November 2005).

<sup>2</sup> The countries are as follows. *Africa*: Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Cote d'Ivoire, Egypt, Ethiopia, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, South Africa, Senegal, South Korea, Tanzania, Togo, Uganda, Zambia, Zimbabwe; *Asia*: Bangladesh, Cambodia, China, India, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Turkey, Viet Nam; *Latin America*: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru; *Transition Economies*: Czech Republic, Hungary, Kazakhstan, Kyrgyz Republic, Poland, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan. A small number of the papers also provide some spatial information on a number of developed countries: Austria, Belgium, Canada, Finland, France, Germany, Greece, Japan, Spain, Switzerland United Kingdom, United States,

<sup>3</sup> These countries are: Brazil, Burkina Faso, Cameroon, Cote d'Ivoire, China, Egypt, Ethiopia, Ghana, India, Indonesia, Kenya, Madagascar, Mauritania, Mexico, Niger, Nigeria Peru, Philippines, Russia, Senegal, South Africa, Tanzania, Togo, Zambia, Zimbabwe, Uganda.

The papers published in the six volumes under the WIDER project represent one of the most comprehensive collections of detailed analysis on spatial disparities in development. They represent a rich source of empirical information and methodological techniques for understanding spatial inequality and its evolution in the development process. It would be impossible to summarize the rich and diverse country specific findings in the papers. However, we can attempt to draw out some of the main findings for policy purposes by asking the following three questions:

1. How big are spatial disparities, and what has been happening to them?
2. What explains the levels and trends in spatial in inequality?
3. What are the appropriate policy responses to spatial inequality?

Let us take each of these questions in turn.

### **Levels and Trends in Spatial Disparities**

While there is tremendous country heterogeneity, of course, the overall conclusion from the wealth of information presented in these studies is that spatial inequality is high and, in many countries, rising. That it is high can be illustrated by the following examples:

1. In Africa, in 6 out of the 12 countries studied by Sahn and Stifel (2003), the percentage of people below an asset poverty line is more than 50 percentage

- points greater in rural areas than in urban areas. The smallest rural-urban difference is 30 percentage points. Similarly, school enrolments, and the ratio of girl-to-boy enrolments, is much higher in urban than in rural areas.
2. In Peru, the incidence of poverty in districts at sea level was 46.1% in 1997, while for districts at an altitude greater than 3,500 meters above sea level it was 63.3% (Escobal and Torero, 2005).
  3. In Indonesia, in 1993, the rural poverty incidence was 46.5% in West Kalimantan, but only 10.7% in Yogyakarta (Friedman, 2005).
  4. In China, in 2002 rural per capita income in Shanghai province was 6,224 Yuan, but only 1490 Yuan in Guizhou province (Wan and Zhou, 2005).
  5. Using community level data on public services, Anderson and Pomfret (2005) show considerable inequalities in the provision of public services in Central Asia. For example, in Tajikistan, “Gorno-Badakhshan, the most isolated region, has poor roads, low quality and inadequately heated schools, and low availability of water, sewer and garbage disposal systems.”

These examples can be multiplied many fold from each of the countries studied in this project. Spatial inequalities are high. But how are they evolving over time? Once again there is country heterogeneity, but the overall conclusion is inescapable. For the 26 countries for which the studies used data over time, spatial inequalities have by and large been on the increase. The following examples are illustrative.

1. In Africa, Sahn and Stifel (2003) conduct tests of rural-urban convergence in achievement indices for eight different welfare indicators. They conclude that “there is only convergence in cases of enrolment and stunting; and when we exclude Nigeria, there are no cases of convergence, while there is statistically significant divergence in cases of asset poverty and enrolments.”
2. In Mexico, using the appropriate statistical tests, Garcia-Verdu (2005) finds convergence across regions in adult literacy, but not in per capita GDP or infant mortality.
3. Forster, Jesuit and Smeeding (2005) examine changes in the regional patterns of inequality in the Czech Republic, Hungary, Poland and Russia using data from the Luxembourg Income Study for the 1990s. They find that “capital cities and major urban areas are mainly winners, while regions which are longer distances from their rich western neighbors characterize losers.”
4. For China, Kanbur and Zhang (2005) estimate inter-povincial inequality over 1952-2000. They find three peaks in spatial inequality—the Great Leap Forward, the Cultural Revolution, and now. Spatial inequality in China has increased dramatically over the last 15 years, and now stands at its highest level in half a century.
5. Friedman (2005) highlights another dimension of regional disparity, that the poverty reducing impact of growth differs from region to region in Indonesia—“poverty has been much more responsive to growth in rural Java and Bali than in the more remote areas of Kalimantan, Maluku, and Irian Jaya with other regions such as Sumatra and Sulawesi falling somewhere in between.”

## **Explanations of High and Rising Disparities**

Why do spatial disparities arise in developing countries? The economic geographer's distinction between first and second nature geography is helpful. First nature geography simply says that some regions are favored by virtue of endowments of proximity to rivers, coasts, ports, and borders. Evidently these factors account for some of the success of coastal China relative to the interior, or border states of Mexico relative to the south. Second nature emphasizes the interactions between economic agents, and in particular increasing returns that can be created by dense agglomerations and interactions. Thus cities tend to have high productivity, and agglomeration forces act to generate virtuous circles of self-reinforcing development. What determines the strength of these forces? How do they depend on aspects of the economic environment such as openness to trade, the stock of labor skills, the quality of infrastructure, and the policy environment? Of course, once their nature is understood, changes in these forces can be adduced as explanations for changing spatial disparities.

Many of the studies in the UNU-WIDER project address the question of explaining high and rising spatial disparities. Again, it would be impossible to summarize

in any simple way the rich range of conclusions from each of these studies, but we can highlight two central causal factors—infrastructure and openness to international trade.

Overall, the studies in this project emphasize “second nature geography” in explaining the level and trend of spatial disparities. In particular, most of the empirical studies that set out to explain spatial inequality in a country invariably end up with public infrastructure as a key explanatory factor.

1. For Africa, many of the social indicators used by Sahn and Stifel (2003) in their documentation of rural-urban disparity, such as school enrollments and neonatal care, are direct reflections of the inequality in the distribution of public schools and public health facilities.
2. Again for Africa, the importance of “remoteness” in explaining poverty is established by Christiaensen, Demery and Paternostro (2005), this remoteness being a function not just of distance but lack of transport connections to the capital city and the coast.
3. For Peru, Escobar and Torero (2005) conduct a statistical analysis in which explanatory variables are introduced in sequence to explain regional income variations in Peru. “First nature” geographic variables such as altitude, soil type and temperature are introduced and provide good statistical explanation. But when infrastructure variables are introduced the explanatory power of the geographic variables weakens and almost disappears. What this suggests is that



- public infrastructure plays a powerful role in explaining levels and changes in spatial disparities.
4. Similar conclusions can be drawn from the work of Ravallion (2005) on China. Using appropriate statistical techniques, he establishes that there are indeed spatial agglomeration forces at play in explaining changes in individual level incomes, and the crucial role of local infrastructure (as well as local natural endowments) in explaining successful income growth. The implication is that spatial disparities will have a tendency to rise, which of course is what is found by the studies in this project.
  5. For India, Lall and Chakravorty (2005) show the propensity of private sector firms to locate away from “lagging and inland regions”, which are of course the regions with poor infrastructure and poor connections to the coast and the major urban clusters.

Spatial disparities have risen over the last two decades according to the studies in this project. The last two decades have also seen considerable opening up of economies to international trade. Are these two phenomena related? While the predictions from theoretical economic geography are ambiguous, the empirical studies in this project appear to support the idea of a linkage.

1. Kanbur and Zhang (2005) find that a variable measuring China's trade openness provides at least partial statistical explanation of increasing regional inequality in China since the start of the economic reforms in 1978.
2. For Mexico, Rodriguez-Pose and Sanchez-Reaza (2005) examine pre and post NAFTA patterns of regional growth, and find that "trade liberalization and economic integration have not provoked a reduction in territorial disparities, but have led to greater polarization." A similar result is found by Garica-Verdu (2005).
3. For Vietnam, Jensen and Tarp (2005) carry out a number of simulation experiments based on a model of trade. They find that "Comparing the poverty impact of trade liberalization between urban and rural areas, it appears that the number of poor expands more rapidly in rural areas compared to urban areas. Trade liberalization will therefore tend to worsen the rural poverty head count bias in Vietnam in the short to medium term."
4. For Africa, the evidence on openness is more indirect. Te Welde and Morrissey (2005) find that in West Africa, foreign owned firms tend to locate in the capital city, pay higher wages and employ more skilled workers, thereby exacerbating inequality vis a vis rural areas. McCormick and Wahba (2003) find that in Egypt, "there is a regional bias in the location of firms and jobs created by returnees compared with non-migrants, in favor of the capital city."
5. Most indirectly, to the extent that openness does lead to higher growth and also higher growth throughout the country, there is nevertheless evidence that more remote areas benefit less from growth in terms of its poverty reduction impact

(Friedman, 2005 for Indonesia, and Christiaensen, Demery and Paternostro, 2005, for Africa), leading to a divergence in poverty rates across the regions of a country.

### **Appropriate Policy**

There are two reasons why policy makers should be concerned about spatial inequality, defined as inequality in economic and social indicators of wellbeing across geographical units within a country. First, inequality *between* a nation's regions is one component of overall national inequality across individuals (the other component being of course inequality across individuals *within* each geographical unit or region). When spatial inequality goes up then, other things being equal, so does national inequality. Second, inequality *between* a nation's regions may be of concern in and of itself, especially when the geographical regions align with political, ethnic, language or religion divisions.

The "new economic geography" has emphasized that there are powerful forces of agglomeration that tend to lead to a concentration of economic activity, magnifying natural geographical advantages that a region may enjoy. Thus spatial agglomeration brings the benefits of returns to scale, and hence helps efficiency and growth. At the same time, openness to the outside world, which is well recognized as a long term source of efficiency and growth, can also lead to spatial concentration. The evidence presented in

the UNU-WIDER project is clear, spatial inequalities are high and rising. What should be the policy response, bearing in mind the tradeoffs involved?

The theory, evidence and causal analysis presented in this project suggests a two pronged approach to addressing the problem of rising spatial inequalities while still reaping the gains from agglomeration and international openness. The first component of the strategy is to remove barriers to the deconcentration of economic activity. These can be political and institutional obstacles, such as the need for firms to locate near political and administrative centers. It also requires the development of economic and social infrastructure to facilitate deconcentration, and to help interior and poorer regions benefit from integration into the global economy. Such investments can also start growth poles in lagging regions—new centers of activity can develop and reach a scale where they benefit from a virtuous circle of agglomeration. The second component is to facilitate, or at least not impede, the migration of individuals and households to areas of high and rising wellbeing. This two sided approach stands the best chance of gaining the most from the efficiencies of agglomeration and openness, without running into the potential destabilization of rising spatial inequality. Here are some examples of support for these components from the studies in this project.

1. For China, Ravallion (2005) argues that “results provide support for the types of poor-area development programmes that have been supported by the Government of China since the mid-1980s....[T]he present results also point to the importance of local endowments of human and physical infrastructure to the microgrowth

- process. When combined with data on the costs to the government's budget of alternative interventions, these empirical results will hopefully also inform public choices on how best to balance agricultural development initiatives with infrastructure development, so as to assure maximum growth of living standards in poor areas.”
2. For India, Lall and Chakravorty (2005) turn their findings on the determinants of firm investment in poor regions into a policy question of how industrial development can be induced to reach the lagging regions. The answer seems to be not industrial ownership by the state in lagging regions (on which the record has not been good) but infrastructure provision to start a virtuous cycle of agglomeration.
  3. For Africa, Christiaensen, Demery and Paternostro (2005) conclude as follows: “The recent microeconomic evidence on poverty dynamics has shown that some regions, by virtue of their sheer remoteness, have been left behind as growth has picked up. Households with limited access to markets and public services have not benefited from growth in the 1990s. The provision of public goods (notably infrastructure services—from the Ethiopian case, especially roads and from the Ugandan case, electricity) is crucial to help poor households benefit from the opportunities created by economic policy reforms and growth.
  4. For China, there is a considerable literature on how restrictions on migration from one area to another have prevented the poor from benefiting fully from the growth of the coastal regions, leading to a dramatic increase in spatial inequality (Kanbur and Zhang, 2005). Of course migration does take place, leading to the large

- number of illegal workers on the streets of the major cities. A freer regime of migration, suitably phased in to address the problems of urban congestion, would constitute the second component of a strategy to manage rising spatial inequalities in China (the first component being of course a more spatially equitable investment strategy for public infrastructure).
5. For Brazil, Timmins (2005) applied a statistical methodology for estimating the power of agglomeration forces while taking into account migration. He found that migration mitigates these forces considerably, so much so that without taking migration into account there may be a considerable overestimate of the benefits of agglomeration returns.
  6. The case of Chile, studied by Soto and Torche (2004) for the project, also highlights the importance of impediments to migration, not so much through physical restriction as through fiscal incentives. They find that lack of convergence in Chile in the 1980s and 1990s is associated with low levels of regional migration and that this phenomenon is in part the result of government social policies. These include restrictions on the sale or rent of subsidized houses, effectively tying families to their original location and, thus, inhibiting migration.

The broad outline of appropriate policy for managing high and rising spatial disparities is thus clear. The case for policy interventions to ensure a more spatially equitable allocation of infrastructure and public services, and for policies to ensure freer migration, has been made powerfully in the papers in this project. But of course

the broad outline still needs to be developed in a detailed and country specific manner. The benefits of infrastructure allocation need to be weighed against the costs, so both will have to be quantified. And the congestion costs of migration will have to be set against its equity benefits. But in order to do this we will need a deeper and more detailed understanding of the determinants of spatial inequality, and how exactly policy interventions in infrastructure and other areas will impinge on it. The studies in this UNU-WIDER have made a start. A full research and policy agenda lies ahead.

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