Urbanization, Institutional Change, and Spatial Inequality in China (1990-2001)

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Revised (16 December 2004 15:49)
Word Count 7,612
target 7,000

Prepared for the Urban China Network
Second Meeting
January 2005, New Orleans
INTRODUCTION.

It is no longer news that China has experienced enormous and virtually unparalleled economic growth since the introduction of market reforms. The overall impact of such shifts in production and labor force activity has received considerable discussion in the scholarly and lay literature. Also, considerable attention has been directed toward the growing individual economic inequality that has accompanied economic development. Yet only limited attention has been directed to the spatial manifestation of this growth across the landscape. Some discussion exists about the differential fortunes of individual provinces and regions. Less attention has been paid to the fate of cities and their surrounding metropolitan regions. Some cities and urban regions have perhaps benefited disproportionately from the sweeping changes. Even less information is available about the spatial differentiation of socioeconomic groups within cities, the traditional pattern of urban ecology. We have every reason to expect that the broad changes in China over the last two decades have brought with them significant shifts in spatial organization and inequality. That is the topic we investigate in this chapter.

The most common spatial change resulting from such development is the differential between average rural and urban incomes, and this holds true for China. For instance, a recent report in the Shanghai Star (Shangyao, 2004) noted, “the urban-rural per capita income ratio was one the order of 1.7 to 1 in 1985 and widened to 3.1 to 1 in 2002.” (See also Wei, 2004). Yet the urban-rural gap is not the only spatial differential in China. Differentiation across wider geography (provinces) and increasing disparity in income levels within the urban settlement system is also in need of examination. It is important to understand these spatial changes. First, they provide a window on overall social changes in Chinese society. Second, differences in organization of space have implications for individual lives. One the one hand, spatial differentiation is a manifestation of social stratification more generally. Second, the spatial organization of resources, particularly those that are publicly provided necessarily means that geographic location has implications for access to those resources. Individuals who reside in more economically dynamic cities and regions may benefit from this growth trajectory (schools, public services, etc.) and similarly, those in better provisioned neighborhoods or districts may benefit.

This important backdrop, on which we do not elaborate in great detail here, helps motivate our approach. It also enables us to examine the current situation in China in
comparison to the Western experience, and we will see what similarities exist in these two very
different spatial contexts.

The organization of the remainder of our chapter is as follows. First, we introduce
some of the theoretical concepts that form the underpinning for our concern and our analysis.
In particular, we present a discussion of the relationship between economic growth, urban
development, and issues of spatial scale. We then present some information on Chinese urban
classification, noting how it differs from classifications used in the United States and Europe.
We next turn to our empirical analysis. After a brief discussion of our data and methods, we
present results on urban differentiation at increasingly refined geographic scales. We look
initially at provincial differences overall; then we examine the patterns of growth and
inequality across the system of cities, and finally, we focus on intra-urban spatial
differentiation and inequality in Shanghai, one of China’s largest and most economically
dynamic cities.

**CHINESE URBAN INEQUALITY: THEORY AND EXPERIENCE**

The **Kuznets paradigm and urbanization**. The average annual economic growth rate
in China has been near or above 10 percent since the 1980s. This impressive achievement in
overall economic growth over last two decades has been accompanied by spatial inequality in
the loci of that growth. One of the most noteworthy accompaniments has been growing
income inequality within and across regions. Here we intend to examine the evolution of that
spatial inequality concentrating on the period since 1990.

Kuznets’ original work (1955) helped to set the agenda for the study of the relationship
between economic growth and income inequality. Kuznets postulated that urban settings
would manifest higher inequality than rural areas. Urban-rural differences and across-urban
differences thus help to frame the context of our analysis of overall inequality. In this chapter
we look centrally at these aspects of urban inequality.

The inverse U-shaped “Kuznets curve” describes the convergence of inequality
between the two sectors during the course of economic growth. The convergence of inequality
will then be a result of the later stage of industrialization and urbanization (Kuznets, 1955: 17-
8). Kuznets assumes that urbanization arises principally from rural-urban migration; hence;
overall inequality follows (Kuznets, 1955: 14-16). However, Anand and Kanbur (1993)
maintain that the interactions between population shifts and income inequality may be far more complex than Kuznets’ assumption and may lead to different paths than originally predicted.

Given the fact that new patterns of spatial inequality in China have been emerging, how can we expect this paradigm to inform China’s current spatial patterns? Our intention is not just to apply the paradigm of “advanced” spatial inequalities to the Chinese case, but to suggest alternative possibilities for the evolution of inequality between the urban and rural sectors, and across cities within the urban sector. We examine both of these, but emphasize the differentiation of development within the urban sector and the potential for growing inequality across the set of cities in the urban system. While Kuznets did not comment on intra-urban inequality, we extend the discussion to the differentiation of urban space within cities.

We can think of a simple contrast to frame the discussion of urban spatial inequality and its relationship to the Kuznets paradigm. On the one hand, we might describe economic growth as a “rising tide that lifts all boats.” A simple rising tide effect might lift all boats equally; in this case all cities would benefit proportionately in the economic growth of the recent past. In this scenario, cities’ proportionate economic growth means no increase seen in the inequality of economic levels across cities. In operational terms, per capita GDP (of each city’s residents) rises, but the dispersion (variance in GDP per capita across cities) does not.

The alternative model is one of regional disparity. Simply stated, some cities do much better than others. Thus, even in the face of increasing economic well-being in the urban sector generally, some cities experience greater increases in per capita GDP than others. Such an outcome would be made manifest through increasing values of inequality statistics across the urban system.

**Provincial and Regional Experience.** Examination of the experience of provinces shows clear trends in regional disparity. Such trends appear to be associated with political shifts and government policies. Jian and et al. (1996), using provincial level panel data that covers the period 1952-1993, show that there have been cycles of income convergence and divergence across provinces. The initial phase of central planning, 1952-65, offers some weak evidence of income convergence. However, there is strong evidence of divergence during the time of the Cultural Revolution. Jian and colleagues then found a convergence of income during the time of rural reform, especially within the coastal regions. However, divergence has recurred since 1990,
and coincides with the period of economic reform of interest to us. Jian and colleagues argue that the growing disparity across provinces is explained entirely by the increasing divergence between coastal and inland areas.

Ravi and Zhang (2003) use a longer provincial-level panel to analyze regional inequality in China from 1952 to 2000.¹ They identified three peaks of inequality: the Great Famine of the late 1950s, the Cultural Revolution during the late 1960s and 1970s. They also show that three key policy variables – heavy industry, decentralization, and openness – all contribute to inequality in different periods.

There may be several explanations for the changing pattern of regional disparity. The source of regional inequality may be due to differential factor endowments (especially natural resources) across regions. Lu and Wang (2002) argue along these lines, stating that uneven regional development can be attributed to differences in regional production factors and the legacy of colonial history in the coastal area.

Government policies are commonly seen as a major contributor to regional disparity. Public investment, foreign trade and industrial policies may benefit some regions but not others. While some policies may be directly designed to reduce disparity, others (intentionally or not) may serve to increase regional economic disparities. At one time public investment in western China may have reduced inequality, but more recent public investment increases in the coastal and central regions would serve to increase disparities (Zhang and Fan, 2000: 12). A recent analysis of per capita gross domestic product at the city level for the late 1980s concluded that the central government’s policy played an important role in coastal region development (Song et al., 2000). Jones and et al. (2003), using city-level data, establish a link between Special Economic Zones and “growth enhancing” foreign direct investment (FDI). Yang and Wei (1995) show that the average annual growth rates of GNP and industrial gross output value in inland regions have been lower than those in coastal regions since 1980. Using regional GDP and GDP of three industrial sectors, Huang and et al. (2003) show that the underdevelopment of secondary industry may play an important role in increasing regional inequality. Yang (2003) argues that

¹ They employ an alternative inequality index, a member of the decomposable generalized entropy class of inequality measure, which was pioneered by Shorrocks (1980, 1984).
“urban-biased policies” may have generated long-term regional disparity. Systematic investment in urban and coastal areas would be consistent with some of these identified trends. Furthermore, the hukou system of residence and access to household resources would affect those provinces with large rural labor pools but with few investment opportunities during the 1980s and 90s.

In sum, the last few decades have witnessed cycles of inequality across provinces and regions in China. These differences in economic growth (and the likely connection to associated differences in personal well-being) are fueled by the differential economic fortunes of the various regions. While it is difficult to disentangle policy interventions from market forces, or to determine the influence of differences in natural resources, several authors argue persuasively for the clear effect of public policy on these shifts in inequality. These changes form an important backdrop to our analysis. Our efforts turn toward understanding the divergence or convergence of the system of cities in China (and implications for internal differentiation as well) in the wake of the sweeping reforms and significant economic growth of the post-1980 period.

Context: The Political Economy of Urban and Rural Space. There are three major scales of spatial inequalities in China: urban-rural division, regional and inter-urban inequalities, and intra-urban spatial inequalities. First, urban-rural inequalities exist in both physical space (in terms of the central and periphery) and “institutional space” (in terms of a set of institutions dividing the city and countryside, see Solinger, 1999 and other chapters in this volume). This latter division is far more significant than other measures in the socialist period. The legacy of urban-urban division can still be seen and exerts strong impacts on spatial inequalities over other scales.

Recent policy shifts have changed this landscape appreciably. The institutional barriers to urban access have been reduced, e.g., the abolition of a registration card for temporary residents and compulsory sending-back of non-registered rural sojourners to their places of origin. The traditional urban-rural division has been a product of China’s dualistically organized regime of accumulation: placing the urban regime in the orbit of the state system while leaving the rural regime outside the state system (tizhi nei versus tizhi wai), and by extension the separation of the industrial from the agricultural sector (Wu and Ma, 2005). The
State urban sector was more privileged at the core of state-led industrialization, while the non-state urban sector was supplementary to the state sector; and the rural sector was exploited to support state-led industrialization.

Second, regional and inter-urban spatial inequalities exist between the coastal region, inner / central region and western region (Fan, 1997). This scale of inequality should be understood through the socialist economic development strategy as well as the international context: the western region is resource-rich but has been underdeveloped economically. National policy has tended to create a spatial division of labor among the regions: the western region provides cheaper resources for the coastal region to produce high value added products. The state, through central planning, has supported the western region by expanding production capacity.

Third, intra-urban spatial inequalities exist between inner urban areas and suburban peripheries and between different workplace-based residences. In the socialist period, urban space was relatively egalitarian. Income differences were modest, even given an occupationally-differentiated living environment (Yet et al., 1995). The basic intra-urban spatial differentiation (inner versus suburban) was related to the “incomplete socialist transformation” (F. Wu, 2002). The legacy of the pre-revolutionary inner areas has not been totally abandoned due to two reasons: lack of investment and deliberate under-investment. Hence, there is spatial inequality between local government-housing areas and state workplace-housing areas. The former is converted from private housing in inner areas and managed by local housing bureaus, while the latter has been developed by state investment firms and managed by individual estate departments within these workplaces. The second division is the inequality between different workplaces, as workplaces have been assigned different administrative ranks and thus different access to state resources. The implications for housing qualities have been explored by Huang and Clark (2002), Logan et al. (1999) and Wu (1996).

Despite the model of the “socialist city” and spatial differentiation caused by the “redistributive state” (see Szelenyi, 1983), the inequality in the socialist period is not comparable to the inequality under capitalism, for the reason that within the city itself the right to the city was “universal,” although this right was fragmented into de facto control.² The

² In this sense, the issue of residential segregation was less meaningful, though a model of occupation differentiation could be identified using population census or other microdata. The issue was not a “problem” nor
issue of spatial inequality becomes more contested and “genuine,” along with market transition, but the current situation is different from hyper-ghettoization in the US. Nor is it even comparable with European cities under the strong influence of the welfare state. (Notably, British Council Housing provided minimum quality shelter, but did little to break down residential segregation by class.) This is so for two reasons. First, spatial differentiation in China is less than two decades old, so as such is a relatively new phenomenon. Second, China lacks the level of ethnic diversity that has characterized the American urban setting and which is now visible in European countries of immigration.

What is distinctive in China is perhaps a dimension of rural migrant segregation. But still, the institution that segregates the migrants may be changing. Although there are reports of sub-cultures based on place of origin (Ma and Xiang, 1998) and “sub-ethnicity” (Honig, 1990), it is undeniable that cultural and linguistic barriers for migrants to the Chinese city are smaller than those in other national contexts. At the same time, there seems to be some relaxation on the administrative stricture imposed on peasant migrants. These include abolishing the practice of sending off non-registered people and improving schooling for migrants. Economic opportunities in the city even allow many migrants to develop their own businesses. In turn, many migrants are economically active and some are quite successful. A parallel case may exist with urban Chinese residents who have never been attached to the state and are ‘residual’ to the formal workplaces. Their position is now further marginalized by urban redevelopment and the ongoing market transition, but their actual circumstances are unknown.

China’s intra-urban inequalities present themselves in several dimensions. The socialist transformation in the 1950s had, in turn, transformed pre-revolutionary class differences into less meaningful occupational differences, and the difference between foreign concessions and Chinese residence supposedly became irrelevant once the unified state system was established. Now, privatization has revitalized class differences; in turn, the quality of the built environment has become more differentiated, as evident in land and housing prices. Second, inequalities have been augmented by different types of housing provisions, which are manifested as the division between workplace compounds, old inner-city housing areas, and commodity (market-oriented) housing estates.

an issue of discourse. When viewed retrospectively, the enquiry made by Szelenyi is provocative, but in our view it may be a misplaced question in the Chinese urban context. The differentiation in urban space between elites and the urban masses was more obvious in the Eastern and Central European countries than in China.
Inequalities are created by more globally-oriented economic sectors such as finance and services (and associated foreign direct investment (FDI), and more traditional sectors such as light manufacturing industries. Yet, an emphasis on the global city and the demise of the national state in urban economies does not capture the continuity of the state role in urban growth, the labor market, and residential form. The state attempts to strengthen local governance by developing local forms of organization, such as neighborhood residents’ committees. Market-based housing is becoming a major source of shelter for better-off residents. Social inequalities are enlarged, at least measured in terms of income differences, with new strata now identified in Chinese society\(^3\) (Lu, 2002).

The classic western literature on urban inequality focused on three major sources of neighborhood differentiation: social status, family status and ethnic status. These three features of urban differentiation were generally found empirically, although not all cities manifested three simple and separable dimensions (White 1987). Moreover, the conventional tradition has been criticized for its neglect of the role of political power and for seeing differentiation through the “natural” tendencies of “invasion and succession.” Recently, literature on social segregation has resurfaced (Hamnett, 2001). Concerns about the impact of globalization, social polarization (Sassen, 1991), new ethnic differences, and the path of transitional economies in central and eastern Europe (e.g., Sykora, 1999) provide impetus for new theorizing on the subject. We expect three sources of differentiation to help drive the internal structure of the contemporary Chinese city. Given our assessment of the literature, we expect differentiation due to 1) the specific nature of Chinese economic development (rapid urbanization and uneven urban and rural development); and 2) modernization and attendant normative changes 3) institutional transition (changing from a plan-based to a market-based economy).

Perhaps most provocative and interesting is an assessment of the degree to which the evolution of contemporary Chinese city will follow any other national, regional or historical model. In one view, the Chinese case exhibits commonality with developing countries (further industrialization, weakening of traditional ties). At the same time current changes are in keeping with industrial structure shifts in developed countries (growth of service industries, influence of globalization, and development of the civil society). Finally, Chinese societal and

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\(^3\) This was reported in an influential study conducted by the Chinese Academy of Social Sciences (Lu, 2002).
economic changes of recent decades have some features that are virtually unique. The particular transition from planned to market-oriented economy is unparalleled; China has retained relatively strong state control even in the midst of decentralization and marketization. Most critically, perhaps, China has attempted to retain the regulation of residence and population movement (through the *hukou* system) more than most other transition economies. This is to say that in no way is the die yet cast for the Chinese urban structure and the form of its spatial inequality, whether that is the intra-urban separation of social groups or the competing and differential fortunes of individual cities in China’s urban system. Our efforts are now directed at understanding some of the empirical manifestations of the dramatic changes of the last decade.

**DATA, DEFINITIONS, AND METHODS**

Our effort is to investigate the manifestation of urban inequality in China under the process of rapid social change and economic transformation. Even more, we are interested in how the Chinese experience will map onto existing theory, mostly drawn from the West. Also we would like to see how spatial inequality has shifted over time in urban China, both within and across cities.

**Urban Definitions and Administration in China.** The urban system in China is a complex overlapping of urban and rural areas and the *hukou* policy in China. More than a geographical definition along the lines of the western standard, “urban” in China consists of cities (*shi* or *chengshi*) and towns (*zhen*). The “city” is an administrative unit in China, which includes an urban area, defined by “district” (*shixiaqu*) and a surrounding rural hinterland, defined by village committee. A “town” is usually a built-up area surrounded by villages. It is an urban area, which is not considered equivalent in rank to a city.

Two systems of territorial reorganization were formalized after reform. The first is the “cities leading counties” (*shidaixian*) system, also known as “cities administering counties” (*shiguanxian*) system. Under this system, implemented in 1979, counties were abolished, which the central government hoped would result in the development of a regional economic network. Second, the abolition of counties and re-establishment of cities would help to redefine the rural population as an “urban” population. Many counties were abolished and turned into cities without any change in boundary or name, while some others were merged
into cities. There was a relaxation of the criteria for establishing cities in 1983, and many former counties and towns have been upgraded to cities. (Yeh and Xu, 1996; Zhang and Zhao, 1998, p. 336-7) The criteria for prefecture-level and county-level cities was also revised in 1993. (For details of the changes, see Zhang and Zhao, 1998.)

China now has a three-tier system of cities: municipal-level, prefecture-level, and county-level. A designated “city proper” at the first two levels normally consists of two kinds of city districts: urban districts (jianchengqu) and suburban districts (jiaoqu), which are mostly under the administration of street committees, although rural areas may be included (Fan, 1995). A district occupies the same position in the hierarchy county. Cities usually have no more than two suburban districts (Zhang and Zhao, 1998, p. 331) Suburban districts may also include rural areas and towns. Some 830 districts were under the jurisdiction of cities as of 2002. (The appendix presents a diagram.)

The prefecture-level city (diji shi, literally "region-level city") is an administrative division of China that is governed directly by provinces. A prefecture-level city ranks between municipal-level city and county-level cities. As of 2002, China has 275 prefecture-level cities. We first use historical city-level data to measure the change in city-level inequality in 3 periods (1990, 1996, and 2001) during the 1990’s. We then extend the measure to other geographic units. At the county level, there are counties and county-level cities. A county-level city (xianji shi) is also a county-level administrative division. Counties and county-level cities are usually governed, in turn, by prefecture-level cities. Similar to prefecture-level cities, county-level cities also usually contain rural areas many times the size of their urban, built-up area. Towns are under the administration of counties. There were 381 county level cities and 1649 counties in China in 2002. Currently four cities have been designated with province-level autonomy: Beijing, Tianjin, Shanghai, and Chongqing.

Data. We draw on several sources of national statistical data to conduct our analysis. Data apply to provinces and various classifications of cities and urban territory. All these data are compiled by the City Investigation Team, State Statistical Bureau. Chinese urban statistics are available for two levels of classification: prefecture and above, and county level. Our prefecture-level data set contains years from 1990 and from 1996 to 2001. The 1996 to 2001 data is from the State Statistical Bureau electronic files [China Data Online, MRDF, 2004],
while the 1990 data is from city statistical yearbook 2003.\textsuperscript{4} In order to analyze the inequality at the city level during the 1990s, we select three time points at which to examine and compare inequality across cities: 1990, 1996, and 2001. We are limited to county-level data from 1997 to 2001. Empirical research at the sub-provincial level is of fairly recent origin, only for these more recent years is county-level data on total population, industry (primary, secondary industry), GDP and the like fairly complete. Appendix tables and figures give more descriptive information and schematic diagrams for the structure of Chinese urban classification.

For intra-urban inequality analysis, we will use Shanghai’s 2000 population census data, disaggregated at the street-office level, to observe the distribution of spatial inequalities, measured by education levels, occupation sectors, and migrant status. Given the focus on a single city, we make use of maps to more vividly and clearly display the geographic sorting of social characteristics.

**Measures.** Our basic measure of inequality is the dispersion of GDP per capita, measured across geographical units. We employ GDP per capita because of its widespread utility and general use. Despite concerns about accuracy of any income measure, we feel that GDP per capita will still capture overall differences in economic development and living standards across urban settings in China. We first compare the dispersion in province level average income. Then we compare the dispersion within the urban system, looking at prefecture-level cities and then county-level cities.

One of the most insightful ways to get a picture of the level of income inequality (dispersion) is to calculate income ratios at selective percentiles. We here calculate the 75/25 ratio and the 90/10 ratio. The first of these values tells us how far apart the point is that separate to top quartile of cities form the bottom quartile. The larger this number the more distance there is in average well-being of the well-off cities from the poorer cities. The 90/10 ratio is exactly analogous representing the top and bottom decile of the urban well-being distribution. This latter measure is more

\textsuperscript{4} Appendix Table 1 presents background descriptive statistics for prefecture level city data, the major data set we are using in this analysis.
sensitive to extremes, especially if a handful of cities is “pulling away” or lagging far behind.5

For some of our analysis we are interested in variation in GDP per capita by level of urbanization of the place. To do so, we first compute the urbanization level using the non-agricultural population/total population. We then classify the urbanization level into four levels, representing urbanization between 0 to 25 per cent, 25.1 per cent to 50 per cent, 50.1 per cent to 75 per cent, and 75.1 to 100 per cent, respectively.

RESULTS

Provincial Differences. The province is the most general geographic scale at which we might be expected to observe growing spatial inequality. Provinces of course have varying access to markets and resources, and moreover, they have varying historical legacies of infrastructure, resource management, and policy. Furthermore, there has been much general attention to the varying fate of provinces within China. In the earliest days of reform, much attention was focused on the southeast, especially Guangdong Province, and its rapid economic growth. This growth was accompanied by in-migration (many of the migrants are rural peasants). Thus, while the overall level of economic activity grew, less is perhaps clear about the trajectory of per capita income. As economic growth spread and persisted through the 1980s and 1990s, other provinces, particularly those along the coast, began to exhibit differential economic growth or “success.”

The question for us then, is this: What has been the net shift in the disparity across provinces during the period? Table 1 presents the 75/25 ratio and the 90/10 ratio for 1990, 1996, and 1999. The larger the ratio, the more unequal the average income level is across the several provinces. Under the hypothesis of differential spatial manifestation of economic growth (the spatial Kuznets hypothesis) we expect these ratios to rise over time.

The fortune of China’s provinces does become more unequal over the 1990s. In 1990 the per capita income level that marked the top 25% of provinces was 1.81 times that of the income level that marked the bottom 25%. This ratio crept up to nearly 2 in 1996 and grew to

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5 These percentile ratios are often used to describe individual wage and household inequality. Our use is exactly parallel, save that our units are cities, and are this aggregates of all the persons who reside within them. The percentile ratios have the added advantage they are robust to price indexes, so the ratios (if not the underlying yuan values) can be compared over time.
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exceed 2 (at 2.07) by 1999. The trend of increasing disparity is confirmed and extended by looking at the 90/10 ratio. Whereas the 10% of most wealthy provinces exhibited incomes about four times that of the bottom 10% of provinces, the disparity was five-fold by 1999.

It is important to recall that in these provincial comparisons (and in all city comparisons below), we are comparing aggregate snapshots at successive points in time. The values do not represent directly inequality among individual workers or household residents, and the values represent the income (regional GDP) of the population’s residents in a particular place in a particular year. This is exactly as we wish; our goal is to look at the level of inequality across regions, cities, or other classifications. Various hypotheses of increasing spatial inequality argue that the disparity should grow.

Intercity Inequality. We now turn to a more detailed analysis of the manifestation of inequality across the urban settlement system. Again examine the 75/25 and 90/10 ratios of place GDP per capita income. Larger values of these ratios point to more dispersion (inequality) across the cities or other settlements under examination. We make these comparisons across the 1990s and for different parts of the settlement classification in China. Again, it is worth remembering that China’s urban definitions, which rely heavily on administrative recognition and often include surrounding territory, do not always correspond neatly to the definition of urban territory in the West.

Table 2 presents our analysis. First we begin with an analysis of the prefecture level (Panel A). In 1990 the 75/25 ratio for the 215 cities-proper (the most restrictive definition) in the sample was 2.12. This means that the average per capita GDP in the city that marked the beginning of the upper quartile of urban well-being (or productivity) was about twice that of the city that marked the lower quartile. In the interval 1990-2001, the 75/25 ratio increased modestly, pointing to somewhat greater income inequality among cities. Additional information is available from the 90/10 ratio. This value increases from about 4 to 4.8 over the decade. The 90/10 ratio is necessarily larger, since it expressed the ratio of the income distribution closer to its “tails.” What is noteworthy, however, is that this ratio increases noticeably more than the 75/25 ratio. This means that the tails have spread out between 1990 and 2001. In more ordinary terms, one can say that the rich (cities) are getting richer and the poor (cities) poorer, or perhaps more accurately that economic growth has been experienced by a smaller segment of urban areas.
We next turn to the next-higher level of administrative organization for urban areas: counties managed by prefecture-level cities (Panel B). Here we find that the 75/25 ratio is lower than for the city-proper group. Thus, these settlements are more compact in their income distribution (in every year) than the city-proper group. Here again, income inequality – the fortune of cities – increases steadily over the 1990s. As with the city-proper, the county level shows a more dramatic increase in disparity for the 90/10 ratio. Thus, the 25 or so (to 10 percent) city-counties that are doing well advanced even more over the decade and managed to pull away from the pack.  

Panel C of Table 2 shows the county-level data. Due to data limitations, we can only compare data between 1997 and 2001. Although the time frame is short, we are able to identify an increase in overall inequality. While the inequality of county level cities increased 10 percent at the 75/25, the 90/10 ratio shows an 18 per cent increment and a substantial increase in inequality between the richest and poorest county-level cities.

**Urbanization and Economic Inequality.** We next take up the question of the relationship between urbanization and overall economic levels. In Figure 1 we consider whether urbanization level is broadly associated with level of per capita income and increases in income dispersion. Figure 1 shows the box plot of the urbanization rate and nominal GDP per capita at city level at 1990 & 2001. Consider first the distribution in 1990. One sees a relatively compact distribution at each level of urbanization. Prefecture-level cities at the lowest level of urbanization – effectively small cities and towns in the hinterland – show very little dispersion. As the urbanization level rises, so, too, does the spread of income across cities in the groups. Stated another way, the more “urban” places exhibit greater inequality. This may replicate the diversity of their economic and industrial structure. The comparison shows that the inequality levels are higher during 2001, and moreover, inequality ratios increase with urbanization level.

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6 These do not have to be the same cities in the top 10 percent from time point to time point. By design we take a snapshot of the city distribution at the time of the data collection (1990, 1996, 2001), letting the fortunes of the cities express themselves through the statistics we calculate. While the set of cities at the top or bottom of the distribution may shift (although we doubt it changes very much) the fact of changing disparity holds.

7 We calculate this urbanization rate by taking the ratio of the nonagricultural population to the agricultural population in the respective administrative unit.

8 cityrgdp90 = prefecture level cities’ GDP per capita in 1990; cityrgdp2001 = prefecture level cities’ GDP per capita in 2001
As we shift focus to data to 2001, we see the rather dramatic impact of a decade of sustained growth. First we see that median income levels (the middle line of each “box” in the box-and-whisker plot) is higher for 2001 than 1990 in the corresponding urbanization group. More notable, however, is the change in relative position across urbanization level. The more urban locations, particularly those at urbanization levels 3 and 4, exhibit much higher per capita income levels and a much wider distribution. In fact the box-and-whisker plot allows us to see more of the pattern dispersion. There is appreciable skew in these city income distributions. The fact that a handful of cities are outliers (points out beyond the upper portion) indicates appreciable economic shifts in a smaller set of places. Such a widening distribution is reminiscent of the “take-off” notions circulated in economic development theory some time ago. To be sure, the overall economic growth of China in the 1990s (and doubtless extending back through the 1980s) was realized more fully in some cities than others.

**Intra-urban analysis.** The intra-urban analysis requires detailed small area statistics (such as census tracts or enumeration districts in the UK or US context). For much of recent time, there has been a dearth of data at this level of geographic detail. Recently, however, census data began to become available at a very crude resolution (finest being the ‘street office district’ or *jiedao*). The scale is still far too large (population around 50,000) to yield the same analytical information as a census tract. Such a scale is equivalent to a ward in the UK census or perhaps a community area or congressional representation district in the US. Moreover, the attributes collected in the census are limited. In the fifth population census in 2000, housing attributes have been added for the first time. The definition of “migrants” becomes more problematic: it only accords those who have been living in the current location for over 6 months but without local household registration. While this would mainly include rural migrants, it also includes the outward relocated households who prefer keeping their registration in the inner area. But the unwillingness to re-register in their current location might indicate its disadvantage in terms of housing and service provision. For example, inner city residents may prefer to maintain their previous registration so as to access better schooling for their children.

Still, despite the disadvantages of scale and data content, these sub-city statistics do allow a window on the sorting of population into urban sub-areas. What is more, they offer
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some opportunity, however approximate, to compare contemporary Chinese urban ecology to expectations based on Western theory or recent trends in Chinese economic development.

Figure 2 shows the distribution of the population with above-college-level education in Shanghai. Education is important for its link to income and occupation (Bian and Logan, 1996). Residents with university degrees have a much better chance of accessing the formal work-unit system in the labor market than those who do not have such education. People with higher education are guaranteed urban residential registration, either through state job allocation, enrollment in the formal workplace, or preferential treatment to attract “talents”. Therefore, education has strong implications for overall social status; and thus, educational differentiation in space is indicative of the pattern of sorting by socioeconomic status.

Figure 2 shows a very clear pattern of concentration of more highly-educated individuals southwest and northeast of the central districts. These areas are close to education and research institutions. The level of concentration, though we lack a strict comparable baseline, seems to be increasing (Wu and Li, 2005). The development of several high-tech industrial development parks in Chaohejin and Zhangjiang has attracted highly skilled laborers. In some inner areas such as Xiaodongmeng (literally, “little east gate” of the old Chinese walled city) and Pingliang Road in Yangpu (industrial areas), we have seen a concentration of low-educated residents.

As we described earlier, the household registration system complicates the identification of urban and rural populations (Chan and Zhang, 1999). Fan (2002) argues that according to registration status, laborers in China are differentiated into three types: (urban) hukou holders as native residents, migrants relocated through formal channels (and hence possessing the urban hukou entitlement) as elite residents, and non-urban-hukou migrants as “outsiders.” This three-part definition accurately reflects status differentiation according to the labor market and residential registration. Extensive research reveals a concentration of migrants at the periphery of the city (W. Wu, 2002; Ma and Xiang, 1998). Figure 3, also using data from 2000 census, shows that the areas immediately adjacent to the central districts (or the built-up areas) are the places favored by migrants. There are several explanations for this uneven pattern: 1) discriminatory housing policy; 2) rental preference of migrants who want to save money; 3) available jobs at the urban periphery, near the location of selected industrial districts.
Although the distribution of individuals whose household registration is not formally attached to the current residence is uneven, as measured by the index of dissimilarity\(^9\), there is no hyper-segregation. The index of dissimilarity between migrants and the total registered population is only 0.24. This would be much lower than the level of segregation exhibited by many ethnic groups in the United States.\(^10\)

Applying the index of dissimilarity to other social groups, we found that the index varies between 0.132 and 0.338. The differentiation between the population with the below-primary-school education attainment and the population with the junior and high school-level attainment gives an index of dissimilarity of 0.132. The index is 0.338 between the population below primary school education and above college education; and 0.241 between the population below primary education and the population above college education.

Scale matters in any interpretation. While these numbers are fairly modest, they are calculated for relative large geographic units (districts of 50,000) in Shanghai. These neighborhoods would be about ten times the population of a US census tract. To the extent that there is further segregation within each of these districts, which is likely, city-wide educational segregation would be much larger if measured at a comparable neighborhood scale. This is particularly relevant when impoverished groups are considered. These low-income groups are more likely concentrated in particular residences (literally, micro-residential region, “xiaoqu”) or neighborhoods in accordance with different types of building provision. If this is the case, and if one had a finer geographic resolution in statistics, the index of dissimilarity or any summary segregation statistic would be larger.

Logan (2004) reported a high index of dissimilarity based on the 1990 population census data of Tianjin, one of the four cities under the direct jurisdiction of the central government. It is found that the index of dissimilarity between postsecondary education and those with less education has a value of 0.40. This level of segregation is almost about the same as the segregation of college-educated and non-college educated population in New York and Los Angeles where entrenched spatial inequalities are well-known.

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\(^9\) The index of dissimilarity is calculated as: $ID = \sum \left| \frac{x}{X} - \frac{t}{T} \right| / 2$, where, $x$ is the number of migrants in the street office district, $X$ is the total number of migrants, $t$ is the registered population in the street office district, $T$ is the total registered population over all street office districts. The index suggests the percentage of migrants should be relocated in order to generate an absolute even distribution.

\(^10\) One should bear in mind that comparability is not strict, since the Chinese units of geography are much larger than US census tracts. In general the larger the geographic unit, the lower the measured level of segregation.
At first pass, Chinese urban social space may appear to be less differentiated. It is difficult to be conclusive, however. To be sure, the special scale at which data are gathered and calculations made would suggest that these segregation statistics are less bound to true neighborhood segregation by socioeconomic status. In addition, and more importantly substantively, social differentiation is just beginning, and it takes time to translate social differentiation into the urban settlement patterns. The built environment is more stable (Beauregard and Haila, 1997), so physical effects accompanying social changes take somewhat longer to manifest.

**DISCUSSION**

**Inevitable Inequality?** The analysis of Chinese cities seems to suggest that increasing inequality is inevitable under market transition, although the exact form of inequality is dependent upon social and cultural contexts as well as the particular mechanisms driving economic development. Echoing the thesis of Szelenyi (1983) that public ownership does not totally eliminate inequality but merely transforms it from one form (market-based) to another (redistributive state or institutionally based), we argue that the Chinese case might suggest even a broader spectrum of inequalities: the difference in residential distribution of non-locally registered population (mainly migrants) should also be related to modernization and urbanization processes, and that inter-regional and intra-urban inequalities are interrelated. This form of segregation is different from but shows some similarity with ethnic segregation. It is related to how “outsiders” become or resist becoming assimilated (Zhou and Cai, in this book volume; Wu and Rosenbaum in this book volume), but the exact institutional mechanism that plays a role to separate social groups with and without registered *hukou* is different from that of transnational immigrants.

While data at the moment do not allow us to judge for sure whether educational attainment and *hukou* status are the key traits associated with residential segregation in China, we have seen that these attributes are clearly important. They are very meaningful in the construction of social space: education is related to human capital, but more importantly in the context of Chinese cities, it points to access to different institutional routes to seek out and obtain residential space; *hukou* as a legacy of state socialism defines the boundaries of urban and rural regimes.
**China and the Western city.** The purpose of this study is not only to show the existence of spatial inequalities across various spatial scales but also to speculate on dynamics and patterns. Besides the replication of western spatial inequalities in the western city associated with a market regime, we witness perhaps a different category of inequalities. Pickvance’s review (2002) of Central and Eastern European residential patterns argues that there is no unitary model for urban social space. It might be difficult to develop a model for Chinese spatial inequalities since these are presented more and more through enclave-like residences. In the suburbs, for example, the best-quality commodity housing estates are mixed with migrant enclaves in spatial proximity but segregated by walls and gates and different territorially-based governance. Individual households are relocated and re-sorted in space (Li and Wu, 2004). This spatial juxtaposition opens up the possibility for comparing the “quartered” or “layered” city in different contexts (Marcuse, 1997).

In relation to economic development, the seminal contribution of Kuznets' work focuses on the relationship between economic growth (measured by GDP) and income inequality. The Kuznets-type of explanation can be viewed as a paradigm of using modernity or economic growth / restructuring to explain spatial inequality. Much research on China’s spatial inequalities, however, follows the sociological tradition of stratification analysis, and from which the contesting theses of market transition (Nee, 1996) and power persistence (Bian and Logan, 1996) have been developed. Our study shows that, by linking inter-regional and intra-urban spatial inequalities, it is possible to develop a more coherent analysis combining both economic and sociological explanations. Economic growth is born out of restructuring and urbanization; rural-urban migration, however, brings the inequality between regions into the intra-urban differentiation.

**CONCLUSION**

Economic growth is accompanied almost inevitably by increasing inequality, as some sectors and workers benefit from the upswing in economic development. So it is the case in China. The appreciable – some would say astounding – economic growth of China over the last two decades has brought with it increasing inequality. Many reports have called attention to increases in overall income inequality and the growing urban-rural gap. But that is not the entire picture. Our objective has been to examine the broader spatial manifestation of that
inequality. We look at dispersion in the distribution of per capita gross domestic product (GDP) across the system of cities in China. We also look further at differentials within the city, examining socioeconomic segregation across Shanghai residential districts.

We look at this dispersion for several reasons. One the one hand it is simply another useful window on the evolving social and institutional structure of China in the wake of reform. What is more, spatial inequality both mirrors social inequality and has implications for social opportunity. A widening gap among cities may mean that some urban residents have more access to emerging opportunities and/or public resources that accompany economic growth, while others may be left behind.

In the end we find significant evidence for growing spatial inequality in the 1990s in China. The urban-rural income gap widened. The economic distance between rich and poor provinces grew. The income gap that separates the top 10 percent of administrative counties from the bottom 10 percent grew by about 50 percent in the 1990s, clear evidence that some locales are “winners” in the economic bonanza. Other geographic units exhibited more modest increases in disparity, but in all cases the gap between the top and the bottom places widened.

Finally, there is evidence from our work that intra-urban differentials are manifest in the contemporary Chinese city. High status and low status groups do not live intermingled throughout the urban area, or so the evidence from Shanghai indicated. While the segregation may be more modest than in the West, there is every suggestion that market transformation has led and will lead to increasing spatial differentiation in the 21st century Chinese city.

All evidence points to some replication in China of the patterns of urban spatial inequality that have been seen during the industrial and post-industrial growth of Western cities. Our interpretation of theory and our empirical results at several geographic scales point to this prognosis. Yet, in many ways the case of the contemporary China’s cities is unique: decades of central planning followed by the liberalization into the socialist market economy; maintenance of significant overarching administrative control of urban development; the residential strictures (albeit now nominal) of the hukou system; and the rapid pace of economic development in a economic environment of globalization and service sector activity. While our analysis does not point to an end point for the socio-spatial evolution of the Chinese urban system, it does strongly suggest that there will remain a role for urban planning and social
policy to examine and perhaps redress an urban development trajectory that is pointed toward increasing inequality over space.
References


Table 1. Spatial Inequality at Provincial Level 1990-1999: Per Capita GDP ratios

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio 75/25</th>
<th>Ratio 90/10</th>
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<tr>
<td>1990</td>
<td>1.81</td>
<td>4.07</td>
<td>28</td>
</tr>
<tr>
<td>1996</td>
<td>1.97</td>
<td>4.76</td>
<td>28</td>
</tr>
<tr>
<td>1999</td>
<td>2.07</td>
<td>4.91</td>
<td>28</td>
</tr>
</tbody>
</table>

Note: For data consistency, Hainan is included in Guangdong, Chongqing is included in Sichuan, and Tibet is not included in provincial level data.
## Table 2. Spatial Inequality in the Urban System 1990-99: Per Capita GDP ratios

### A. Prefecture level cities proper

<table>
<thead>
<tr>
<th></th>
<th>75/25</th>
<th>90/10</th>
<th>N</th>
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</thead>
<tbody>
<tr>
<td>City proper in 1990</td>
<td>2.12</td>
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<td>City proper in 1996</td>
<td>2.14</td>
<td>4.54</td>
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<td>City proper in 2001</td>
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<td>4.80</td>
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### B. Prefecture level Counties managed by cities

<table>
<thead>
<tr>
<th>Counties managed by cities in 1990</th>
<th>75/25</th>
<th>90/10</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counties managed by cities in 1990</td>
<td>1.58</td>
<td>2.71</td>
<td>167</td>
</tr>
<tr>
<td>Counties managed by cities in 1996</td>
<td>1.92</td>
<td>3.64</td>
<td>202</td>
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<tr>
<td>Counties managed by cities in 2001</td>
<td>1.96</td>
<td>3.94</td>
<td>220</td>
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</table>

### C. County level cities and surrounding counties

<table>
<thead>
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<th>90/10</th>
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</thead>
<tbody>
<tr>
<td>Rural county 1997</td>
<td>2.15</td>
<td>4.26</td>
<td>1541</td>
</tr>
<tr>
<td>Rural county 2001</td>
<td>2.20</td>
<td>4.52</td>
<td>1605</td>
</tr>
<tr>
<td>County level city 1997</td>
<td>2.09</td>
<td>4.03</td>
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</tr>
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<td>County level city 2001</td>
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<td>4.71</td>
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</tr>
<tr>
<td>Total (county + city) 1997</td>
<td>2.28</td>
<td>5.07</td>
<td>1886</td>
</tr>
<tr>
<td>Total (county + city) 2001</td>
<td>2.40</td>
<td>5.41</td>
<td>1946</td>
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</table>

Figure 1: Box & whisker plots GDP per capita at prefecture level city proper at 1990 (left box of pair) & 2001(right box of pair), by level of urbanization [1,2,3,4] of the prefecture.
Figure 2. Distribution of the population with above college-level education in Shanghai, derived from census 2000.
Figure 3. Distribution of non-locally registered residents (mainly migrants) in Shanghai, derived from census 2000.
## Appendix Table 1: Descriptive statistics of variables for Prefecture level City, 2001

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population at year-end (10,000 persons) (prefecture)</td>
<td>1561</td>
<td>366.2</td>
<td>230.0</td>
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<tr>
<td>Total Population at year-end (10,000 persons) (city)</td>
<td>1562</td>
<td>95.0</td>
<td>78.5</td>
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<tr>
<td>Non-agricultural Population (10,000 persons) (prefecture)</td>
<td>1561</td>
<td>98.5</td>
<td>71.1</td>
</tr>
<tr>
<td>Non-agricultural Population (10,000 persons) (city)</td>
<td>1562</td>
<td>57.0</td>
<td>58.5</td>
</tr>
<tr>
<td>Gross Domestic Product (10,000 yuan) (prefecture)</td>
<td>1564</td>
<td>2683673</td>
<td>2902213</td>
</tr>
<tr>
<td>Gross Domestic Product (10,000 yuan) (city)</td>
<td>1575</td>
<td>1236248</td>
<td>1951252</td>
</tr>
</tbody>
</table>

Source: SSB Prefecture level city data
## Appendix Table 2:
Comparison table of distribution of city sample used in present analysis to 2002 yearbook

<table>
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<tr>
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<th></th>
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<tbody>
<tr>
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<td>Online Data 1996-2001</td>
<td>City at county</td>
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<td>City at county</td>
</tr>
<tr>
<td>Level</td>
<td>City at prefecture</td>
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<td>County</td>
<td>City at prefecture</td>
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<tr>
<td>Beijing</td>
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<td>0</td>
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<tr>
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<td>4</td>
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<td>N/A</td>
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<tr>
<td>Hebei</td>
<td>11</td>
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<td>11</td>
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<tr>
<td>Shanxi</td>
<td>10</td>
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<tr>
<td>Guizhou</td>
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<td>5</td>
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<td>Tibet</td>
<td>N/A</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Shaanxi</td>
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<tr>
<td>Xinjiang</td>
<td>2</td>
<td>69</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>261</strong></td>
<td><strong>1616</strong></td>
<td><strong>336</strong></td>
<td><strong>265</strong></td>
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</tbody>
</table>
Appendix Figure 1. Schematic representation of urban definition in China

Appendix Figure 2. Schematic representation of county level administration