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Urbanization, Urban-Biased Policies, and Urban-Rural Inequality in China, 1987–2001

Abstract: Post-reform economic policies in China have been biased toward urban residents and have contributed to the increasing urban-rural inequality. Analysis of the provincial panel data during 1987–2001 shows that urbanization significantly narrowed the urban-rural inequality. We also find that interprovincial migration, economic opening, and governmental participation in economic activity are contributing to the expanding urban-rural inequality. The structure of governmental expenditure is also found to have significant effects on urban-rural inequality.

Ignorance concerning income inequality during economic growth might lead to social instability as in Latin America and harm long-term growth. According to statistics, China is among the countries with the largest income inequality. Exist-

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ing literature has attributed this great inequality to the growing interregional and urban-rural inequality (Kanbur and Zhang 1999; Khan and Riskin 1998; Li 2003; World Bank 1997; Yang 1999; Yao and Zhu 1998; Zhao Renwei 1999). Moreover, decomposition of income inequality shows that interregional inequality is also related to the great urban-rural inequality (Hussain, Lanjouw, and Stern 1994; Kanbur and Zhang 1999; Tsui 1993). In recent years, much literature has studied China's interregional inequality and its determinants, while urban-rural inequality has not been intensively analyzed. Because most poor people live in the countryside (Khan 1999), the study of urban-rural inequality is also of great importance for policymakers to reduce rural poverty in China.

China's urban-rural inequality reached bottom in 1984 owing to the rural reform that began in 1978. Afterward, urban-rural inequality kept rising until the government raised the price of agricultural products in 1995. Since 1997, inequality has increased once again as the price of agricultural products has fallen. In 2000, the ratio of urban-rural real income reached 2.46, which, considering the subsidies for medical care and education that urban residents have, should be larger (Li 2003). Yang (1996), Ye (1996), Xue (1997), Yang (1999), and Kanbur and Zhang (1999) also reported trends concerning rising urban-rural inequality. Figure 1 depicts the urban-rural inequality of real income¹ in each province from 1987 to 2001. It is clear that urban-rural inequality has kept on growing, except during the period from 1995 to 1997, when the price of agricultural products was raised.

What are the causes of urban-rural inequality? The research team of the National Bureau of Statistics (NBS 1994) argued that economic growth increases urban-rural inequality and that the urban-rural segmenting system in China also contributes to the growing rate of inequality. In a survey article, Li (2003) viewed the following aspects as noteworthy: governmental regulation of the price of agricultural products; the unreasonable tax burden on rural residents; the segmentation of urban and rural labor markets; and discrimination in social welfare and social security. In recent years, great progress has been made in empirical analysis on the effects of economic policies on urban-rural inequality. Wei and Wu (2001) studied the determinants of urban-rural inequality using data from approximately 100 cities. They argued that economic opening does not increase urban-rural inequality as one might expect from the aggregate data. In contrast, they found that openness tends to narrow urban-rural inequality. It is important to note, however, that their study excluded cities without rural areas, so their conclusion could hardly be generalized. Lu (2002) used the ratio of per capita urban-rural consumption to measure income inequality and found: (1) urban-rural consumption disparity on average increased in the 1990s, but the growth of disparity slowed in the second half of the 1990s; (2) provinces with higher GDP per capita tend to have more equal urban-rural consumption levels. This relationship strengthened in the 1990s, implying that most of China may have passed the upward part of the Kuznets curve; (3) labor productivity gains from intersector labor mobility (measured by

Figure 1. Urban-Rural Income Inequality in China (1987-2001)



Sources: See the appendix to this paper.

(2) "Region" denotes provinces except Tibet and Chongqing. They are: 1=Beijing, 2=Tianjin, 3=Hebei, 4=Shanxi, 5=Inner Mongolia, 6=Liaoning, 7=Jilin, 8=Heilongjiang, 9=Shanghai, 10=Jiangsu, 11=Zhejiang, 12=Anhui, 13=Fujian, 14=Jiangxi, 15=Shandong, 16=Henan, 17=Hubei, 18=Hunan, 19=Guangdong; 20=Guangxi, 21=Hainan, 23=Sichuan, 24=Guizhou, 25=Yunnan, 27=Shaanxi, 28=Gansu, 29=Qinghai, 30=Ningxia; 31=Xinjiang. Notes: (1) The horizontal axis denotes year, and the vertical axis denotes the urban-rural real income ratio.

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gross allocation effect) are marginally significant in association with larger urbanrural consumption disparity. Where these gains are higher, however, the increase of urban-rural consumption disparity tends to be slower; (4) efficiency of local governance (proxied by per capita consumption–GDP growth ratio) is fairly significant in a negative association with both the urban-rural consumption disparity and its changes.

The distortion in the labor market is believed to be important in shaping urbanrural inequality. Li and Wei (1999) found that the outflow of rural laborers increased the income of rural residents because migrant workers send money back to their hometowns. Furthermore, the productivity of the remaining laborers is raised due to the outflow of labor. Li (1999) also provides evidence concerning the positive effect of rural labor flow on the income of rural residents and believes that it narrows urban-rural inequality. Shi, Sicular, and Zhao (2002) studied urbanrural inequality using health and nutrition data in nine provinces. They divided income into earnings and non-earnings, and earnings into working income and non-working income, where working income was divided into wage and self-employment income. As a result, they have produced an index of urban-rural inequality and controlled the effect of working time that was found to have a significant impact on urban-rural inequality. Furthermore, after controlling for personal characteristics including occupation, about 50 percent of the inequality remains unexplained. This inequality may be the result of higher living costs in cities and labor market distortions. When controlling for urban living costs, the remaining 42 percent of urban-rural inequality and 48 percent of hourly income disparity is due to labor market distortion. Shi (2002) controlled for the household registration system using the same data set and found that it could explain 28 percent of the urbanrural inequality. The remaining effects of labor market distortion are due to unobserved factors.

A recent unpublished working paper (Zhang et al. 2003) used provincial panel data to study urban-rural inequality. Its findings show that because of urban bias, financial development—proxied by the ratio of credit to GDP—increases urban-rural inequality. The authors also found that during 1978–1998, economic opening (the ratios of FDI to GDP and export to GDP) increased urban-rural inequality, but that the ratio of export to GDP has narrowed urban-rural inequality since the late 1980s. The authors have also shown the positive effects of the household responsibility system in reducing urban-rural inequality.

Like the work of Zhang et al. (2003), our study is also based on provincial panel data. Though existing literature has noted the negative effects of urban-biased economic policies on urban-rural inequality (Chen 2002; Yang 1999), there are few empirical studies based on provincial panel data, yet our study has two main departures from that of Zhang et al. First, the effects of economic policies are more intensively studied. Such effects include urbanization, employment restructuring, and changes in the structure of governmental fiscal expenditure, as well as economic opening. Second, due to the incompleteness of the data on provincial

imports, exports, and FDI before 1986, this information was replaced with data from 1999–2001.

Our article is organized as follows: the next section provides a discussion on the urbanization process in China and its two-sided effects on urban-rural inequality. Following that we discuss how policies regarding economic reform are biased in favor of urban residents and how they may contribute to urban-rural inequality. We then present the empirical results, followed by our conclusions.

China's Urbanization and Urban-Rural Inequality

In most countries, urbanization correlates to development, but in China, urbanization lags behind development. In 2002, China's secondary and tertiary industries accounted for 51.1 percent and 33.5 percent of GDP respectively, but only 21.4 percent and 28.6 percent of employment. Beyond this, the urban population only accounts for 39.09 percent of the total population.² Although China has undergone rapid urbanization since economic reform—measured by the percentage of the nonagricultural population³—in most provinces, urbanization remains at a low level (see Figure 2).

It is China's dual policies segmenting cities from the countryside that has led to lagging urbanization. During the central planning era, China was under a dual economic structure in accordance with the strategy of "catching-up." Under this developmental strategy, economic resources were concentrated in the heavy and chemical industries within urban regions. The prices of agricultural products were compressed to lower wage costs in cities, effectively raising the profits of urban industries. Meanwhile, with capital-intensive technology, the industrial sector could not absorb many laborers. Hence, aiming at zero unemployment in cities, the administration system—based on the household registration system—hindered urban-rural labor flow and migration. During economic reform, the urban-rural segmentation was maintained. In particular, to protect urban residents, many large and medium-size cities limited rural labor's entry into good jobs by administrative means. Some economic means were further used to raise the financial costs of labor flow. Employers are required to pay an "administrative fee" for rural employees, and rural workers are discriminated against in terms of social security, education, public service, and rights protection in cities (Cai, Du, and Wang 2001). Under the household registration system, rural migrant workers do not have the same rights as urban residents, thus facing higher income risks. Meanwhile, the high price of housing also restrained rural workers from moving their whole families to the urban centers. Being discriminated against and being unable to live with their families, migrant workers also face high psychological costs. For this reason they hope to return home after short-term migration as better-educated workers seeking employment opportunities within local industries (Zhao 1997; 1999a; 1999b). Therefore, it is because of the administrative system segmenting cities from the countryside that China's urbanization lags behind economic develop-



Figure 2. The Percentage of Non-Agricultural Population in China (1987–2001)(%)

Note: The horizontal axis denotes year, and the vertical axis denotes the percentage of non-agricultural population. For the key to the regions, see Figure 1, note 2.

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ment and industrialization. Our question is: How has the urbanization process affected urban-rural inequality? In the following analysis we argue that there are two-sided effects of urbanization on urban-rural inequality and the net effect is an empirical issue.

Urbanization narrows urban-rural inequality. In a dual economy with expected urban-rural gaps in earnings, there must be labor flow (Todaro 1969) that equalizes the returns to factors and narrows urban-rural inequality. On the one hand, wages in the urban labor market will fall with more labor supply. On the other hand, the outflow of rural workers reduces the surplus of labor in the countryside, effectively upgrading productivity and the incomes of remaining rural laborers.

However, urbanization in China may also have negative effects on the urbanrural-inequality relationship. It is noteworthy that richer rural inhabitants tend to have a higher possibility of obtaining *hukou* in cities during reform than poorer inhabitants: (1) during the process of urbanization, those peasants who lose their land holdings become urban residents. Obviously, richer rural areas are the first to be urbanized; 4 (2) the transaction of *hukou*⁵ is another way for rural residents to become urban residents, and richer rural people are more able to pay for urban hukou; (3) if the children of rural residents can graduate from universities/colleges and find jobs in cities, most of them can obtain urban *hukou*. Generally speaking, families in richer rural areas are better equipped to afford education expenditures for children; (4) to find a formal job or to marry an urban resident and find a formal job is also a possible channel for becoming an urban resident. Rural residents who are richer or have higher social rank are more capable of finding formal jobs within the boundaries of urban centers. The urban and rural income statistics are based on *hukou*. If richer residents are the first to be urbanized, urbanization might increase statistical urban-rural inequality even without changing per capita income.

Let us explain the above argument with some simple equations. Assume that the number of rural residents is n, the number of urban residents m, and the per capita income of rural and urban residents are x and y, respectively. Assume that a rural resident is urbanized whose income is z. Before urbanization, the urban-rural per capita income ratio is y/x, while after the urbanization the ratio r becomes:

$$r = \frac{\frac{ym + z}{m+1}}{xn - z}$$
(1)

If r > y/x, urban-rural income inequality is increased even if nobody's income has changed. Simple mathematical deduction yields that r > y/x is equivalent to:

$$z > y \cdot \alpha \tag{2}$$

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where

$$\alpha = \frac{1}{1 + \frac{m+1}{m+n} \cdot \left(\frac{y}{x} - 1\right)} \tag{3}$$

It is clear that α is determined by two factors. One is the percentage of urban population, approximately equal to

$$\frac{m+1}{m+n},$$

and urban-rural per capita income ratio, y/x. The lower the percentage of the urban population and the urban-rural per capita income ratio, the higher the value of α is. Suppose that the percentage of the urban population is 40 percent and that the urban-rural per capita income ratio is 2.5—which is similar to the current numbers in China—then $\alpha = 0.625$. This means that urbanization increases urban-rural inequality as long as the income of marginally urbanized peasant reaches 62.5 percent of the urban per capita income. Another interesting inference is that during the urbanization process, the critical value of α decreases gradually because of the rising percentage of urban population and urban-rural per capita income ratio. That is to say, a higher level of urbanization implies inequality (2) to hold.

In summary, China's urbanization may have two-sided effects on urbanrural inequality, thus the net effect remains an empirical issue. In this article we also generate a comparative measure of interprovincial migration with *hukou*. Under the current *hukou* system, changing *hukou* policy is managed by local governments. It can be readily observed that most of the interprovincial migrants who obtain their *hukou* are better educated or have higher income; accordingly, these workers tend to move to cities. So, a province with more immigrants might have larger urban-rural income disparity. In the empirical study, we also control the ratio of interprovincial migrants to local population. This variable can also help us understand the effects of urbanization on urban-rural inequality.

Urban-Biased Economic Policies and Urban-Rural Inequality

China's economic reform was initially launched in rural areas. However, since the mid-1980s, with the completion of the household responsibility system, rural reform associated with economic transition was barely visible. During 1987 to 2001, the period of our panel data, China's economic reform was mainly undertaken in urban areas, which inevitably affected the urban-rural

dynamic. In order to comprehend urban-rural inequality, one should understand the policy-generation system in China. China has an administrative system of five layers. Below the central and provincial levels, there are municipal governments that govern counties, and county governments that govern towns (*xiang*). Under this system, the rural residents in counties are governed by municipal governments. In the People's Congress, only a small proportion of people's representatives are from rural areas. This system removes policymakers far from rural voices, leading to most rural concerns being largely unheard. This section is intended to discuss the effects of economic policies such as the opening of the economy, employment restructuring, adjustment of the role of government, and change in the structure of fiscal expenditure.

Economic Opening

Opening is reflected by the international flow of goods and capital. Since reform, the structure of China's international trade pattern has changed a lot. The proportion of manufacturing goods, in terms of value of exports, has kept on rising and in 2001 it reached 90.1 percent, the first time it exceeded 90 percent.⁶ That is to say, China's integration into the global market has mainly promoted the development of manufacturing, related finance, and trade and services. Since these sectors agglomerated in urban areas, the development of international trade mainly benefits urban residents. Similarly, FDI is allocated to cities and towns, benefiting urban residents to a greater extent. Therefore, we expect that weakening economic inhibitors should have increased urban-rural inequality.

Employment Restructuring

Denationalization could possibly be the most significant change as an outcome of economic reform. Figure 3 shows the percentage of staff and workers in nonstate units in various provinces, from which we can see that in most provinces nonstate units' share in employment has increased significantly, especially in recent years. This is mainly due to the denationalization of urban state enterprises and the development of township and village enterprises (TVEs) (Lu et al. 2002). The development of TVEs absorbs the surplus of labor within agricultural industries and increases the income of rural residents. However, employment restructuring in urban areas has two opposing effects on urban-rural inequality. On the one hand, employment restructuring brings more competition within the urban labor market and compresses the urban wage. On the other hand, the allocative efficiency in the urban labor market is improved and competition also helps induce organizational efficiency. In this way, urban wages are effectively raised. Therefore, the net effect of employment restructuring on urban-rural inequality remains empirical.



Figure 3. The Percentage of Workers and Staff in Non-State Units in China (1987–2001)(%)

Note: The horizontal axis denotes year, and the vertical axis denotes the percentage of workers and staff in non-state units. For the key to the regions, see Figure 1, note 2.

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The Role of Government

In China, local governments have always played an important role in economic activity and policy formation. The central government assesses the performance of local government officials by GDP growth, so local governments always concentrate economic resources in cities and nonagricultural industries that are main contributors to economic growth. Hence, only a small part of the local fiscal expenditures actually reach rural workers and industries. Accordingly, most rural governments have to finance their own public services, including education. Though the data does not reveal how much local governments spend in cities, it is safe to assume that local fiscal expenditure must be urban-biased in order to achieve local economic growth. The higher the ratio of local fiscal expenditure to GDP, the more urban areas benefit and the larger the resulting urban-rural inequality.

The Structure of Fiscal Expenditure

The structure of fiscal expenditure reflects the bias of local fiscal policy. According to Chinese statistics, local fiscal expenditure consists of five categories: capital construction; innovation funds for enterprises; supporting agricultural production; culture, education, science, and health care; and government administration. Here we discuss the effects of the proportion of three categories on urban-rural inequality.

Capital Construction

We hypothesize that the higher the proportion of capital construction, the lower the urban-rural inequality. This is because China's construction, especially infrastructure construction, is mainly completed by rural migration workers.

Supporting Agricultural Production

Obviously, this expenditure benefits agriculture and peasants. We infer that the higher the proportion of the expenditure to support agricultural production, the lower the urban-rural inequality. Because local governments seek economic growth, the proportion of this category tends to fall in various provinces (see Figure 4), which may lead to larger urban-rural inequality.

Culture, Education, Science, and Health Care

The expenditures related to this category are mainly located in cities and towns. In contrast, the rural people have to finance such public goods and services internally. Consequently, a higher proportion of spending in this category is expected to result in greater urban-rural inequality.

Figure 4. The Percentage of Fiscal Expenditure Supporting Agricultural Production in China (1987-2001) (%)



Note: The horizontal axis denotes year, and the vertical axis denotes the percentage of fiscal expenditure supporting agricultural production. For the key to the regions, see Figure 1, note 2.

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Empirical Analysis

To estimate the effects of urbanization and various policies on urban-rural inequality, we establish the following regression model:

$$id_{ii} = c + \beta_1 \cdot nagripop_{ii} + \sum_j \alpha_j \cdot D + \mu_{ii}$$
(4)

In equation (4), the subscripts *i* and *t* (t = 1987, ..., 2001) denote respectively the *i*th province and *t* year. The data set covers twenty-nine provinces, except Tibet and Chongqing which lack of sufficient data. μ is the error.

Term *id* is the index of the urban-rural inequality that is equal to the ratio of urban disposable income per capita to rural net income per capita. A larger id reflects a higher level of urban-rural inequality. When calculating *id*, we deflated the income data by urban and rural CPI from various provinces. Nagripop represents the percentage of the nonagricultural population that we use to measure urbanization. We cannot find the data of urban population at the provincial level during 1987-2001. Furthermore, the population statistics are based on hukou and many nonagricultural people in cities or small towns do not have urban hukou, thus the proportion of statistical urban population underestimates the level of urbanization. β_1 is the coefficient of urbanization. The proportion of nonagricultural population might suffer from endogeniety, so we remedy the problem by introducing the birth rate, *birth*, as an instrumental variable. The birth rate is controlled by family-planning policies. In urban areas such policies are very strict; however, in the countryside such policies are weaker and less effective, permitting a couple to have two children, if the first one is a girl. Therefore, if the government controls the birth rate more efficiently, the rural countryside may experience a reduced birth rate, resulting in an increase in the rate of urbanization. Being aware of the potential impact on the current birth rate from an increased rate of urbanization, the birth rate has been lagged one year to act as an instrumental variable of the urbanization rate.7

D is a vector including other independent variables while α_j 's are the coefficients. What we control for includes:⁸

Mpopr: This is what we have computed as the ratio of accumulated interprovincial migrants with *hukou* at destination since 1979 in local population. We subtract natural population growth from total population growth rate to get the current migration rate that does not include migrants without local *hukou*. The product of the migration rate and the total population yields the current number of interprovincial migrants. The numbers of migrants in various years are then added up and divided by the total population to get *mpopr*. This variable is expected to enlarge urban-rural inequality;

Fdi: This is the index of openness of the capital market that is the ratio of

FDI to GDP in terms of value, computed according to the medium exchange rate between the U.S. dollar and RMB each year. The coefficient is expected to be positive;

Trade: This measures openness of the goods market that is the ratio of international trade to GDP in terms of value, also computed according to the medium exchange rate between the U.S. dollar and RMB annually. The coefficient is expected to be positive;

Nsoeemp: This represents employment restructuring as it is a reflection of the nonstate units' share in the total number of workers and staff. The sign of the coefficient is left to be estimated;

Fiscalexp: This is to measure the government's participation in economic activity. The index is the ratio of local fiscal expenditure to GDP calculated each year. Because of the urban-bias of local expenditure, we expect the coefficient to be positive;

Constr: This variable is calculated as the proportion of capital construction in local expenditure. As capital construction creates jobs and income for rural migration workers, the coefficient is expected to be negative;

Agri: This variable denotes the proportion of expenditure supporting agricultural production in local expenditure, the coefficient of which is expected to be negative;

Culture: This represents the proportion of expenditure on culture, education, science, and health care in local total expenditure, the coefficient of which is expected to be positive;

Agriloan: This is to measure to what extent bank loans support development initiatives in the countryside. The index is the value of agricultural loans as a proportion of total loans. As agricultural loans are beneficial for agriculture and peasants, we expect that the coefficient of this variable is negative;

Loan: This is a control variable that measures financial development. The index is the ratio of bank loans to GDP in each year. Zhang et al. (2003) argued that China's financial development is urban- and large-enterprisebiased, so they tested whether financial development enlarges urban-rural inequality and obtained supportive evidence. Therefore, in our data we also expect the coefficient of *loan* to be positive.

The statistical description of each variable is listed in Table 1.

In regression, each variable has been taken natural logarithm before entering the regression.⁹ Therefore, the coefficients are also the elasticities.

First of all, we do regressions based on data from all provinces and report the

Table 1

Statistical Description of the Variables

	No. of				
Variables	observations	Mean	error	Minimum	Maximum
ld	435	2.340	0.607	1.241	4.458
Nagripop	435	27.813	14.752	11.819	75.280
Mpopr	435	2.552	3.633	-3.035	28.602
Fdi	435	2.704	4.058	0.000	24.193
Trade	435	21.860	27.779	2.729	184.453
Soeemp	435	75.076	8.509	50.257	90.501
Fiscalexp	435	12.514	4.880	4.679	33.658
Constr	428	9.324	4.266	3.136	25.962
Agri	428	6.609	3.676	0.791	15.428
Culture	428	25.538	3.498	16.659	43.403
Loan	431	88.715	28.024	1.182	255.640
Agriloan	328	4.491	2.901	0.382	20.428
Birth	435	16.424	4.857	4.700	26.510

results in Table 2. Equations (1), (2), and (3) are results of fixed effects estimation. We have not reported random effects models that are rejected by Hausman tests. Equations (4), (5), and (6) are IV-fixed effects models, in which we instrument nonagricultural population by lagged birth rate. In equations (1) and (4), all explanatory variables are included. In equations (2) and (5), two insignificant variables are excluded, while equations (3) and (6) exclude two financial variables that are not controlled by the government. From Table 2 we can see the following results. First, according to fixed effects estimation, urbanization significantly narrows urban-rural inequality, but in IV-FE models the urbanization variable is insignificant, even though the coefficients are larger. However, the Hausman tests suggest that the FE estimations are not subject to significant endogeneity bias. In other words, the net effect of urbanization on urban-rural inequality is negative, though in theory it could increase the inequality because the rich have a higher possibility of being urbanized. Urbanization narrows urban-rural inequality, but interprovincial migration, measured by mpopr, increases the inequality. This is consistent with what we expect. With the rich being interprovincial migrants to cities, the destination might see larger urban-rural inequality with more interprovincial migration. Second, economic opening, employment restructuring/ privatization, and local government participation in economic activities tend to significantly increase urban-rural inequality. Third, the structure of fiscal expenditure does affect urban-rural inequality. A higher proportion of fiscal expenditure on capital construction and support for agricultural production help narrow urban-

Table 2

Estimation Results: All Provinces

		FE			IV-FE	
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Nagripop	-0.579***	-0.578***	-0.198***	-0.565	-0.566	-0.263
	(0.112)	(0.107)	(0.065)	(0.436)	(0.396)	(0.207)
Mpopr	0.263***	0.263***	0.079**	0.261***	0.261***	0.086**
	(0.055)	(0.053)	(0.038)	(0.088)	(0.075)	(0.043)
Fdi	0.077***	0.077***	0.065***	0.077***	0.077***	0.069***
	(0.018)	(0.018)	(0.016)	(0.023)	(0.026)	(0.021)
Trade	0.108***	0.107***	0.093***	0.107***	0.107***	0.093***
	(0.028)	(0.026)	(0.021)	(0.028)	(0.026)	(0.021)
Nsoeemp	0.181***	0.181***	0.117**	0.180**	0.180**	0.116**
	(0.068)	(0.067)	(0.050)	(0.076)	(0.073)	(0.050)
Fiscalexp	0.160**	0.160***	0.170***	0.162*	0.162*	0.173***
	(0.063)	(0.061)	(0.047)	(0.090)	(0.095)	(0.050)
Constr	-0.085***	-0.085***	-0.052**	-0.085***	-0.085***	-0.051**
	(0.027)	(0.027)	(0.025)	(0.027)	(0.028)	(0.025)
Culture	0.158**	0.158**	0.184***	0.160	0.160	0.173**
	(0.076)	(0.074)	(0.069)	(0.099)	(0.102)	(0.076)
Agri	-0.000		-0.001***	-0.000		-0.001***
	(0.0005)		(0.0003)	(0.0006)		(0.0004)
Agriloan	-0.001***	-0.001***		-0.001**	-0.001***	r
	(0.0004)	(0.0004)		(0.0006)	(0.0005)	
Loan	-0.0008			0.0007		
	(0.055)			(0.074)		
Constant	0.552	0.549	-0.189	0.499	0.504	0.059
	(0.599)	(0.538)	(0.388)	(1.793)	(1.517)	(0.844)
R2	0.427	0.427	0.330	0.427	0.427	0.328
F Test	19.54	24.05	21.33			
Wald test-p value				0.0000	0.0000	0.0000
Hausman test	26.58	44.12	78.64	0.00	0.00	0.11
(p value)	(0.0053)	(0.0000)	(0.0000)	(1.0000)	(1.0000)	(1.0000)
No. of Obs.	328	328	428	328	328	428
No. of Groups	28	28	29	28	28	29

Notes: Dependent variable—urban–rural inequality: id. Standard errors in parentheses. ***, ** , and * denote significance level at 1 percent, 5 percent, and 10 percent, respectively. In the estimation including the percentage of agricultural loan, observations in all provinces in 1999 to 2001, in Fujian before 1994, and in Sichuan in all years are dropped for missing data.

rural inequality, while a higher proportion of fiscal expenditure on culture, education, science, and health care increases inequality, as expected. Fourth, financial loans are found to significantly narrow urban-rural inequality. Fifth, when we exclude two financial variables that are not directly controlled by governmental policies, the proportion of fiscal expenditure for agriculture becomes significant in reducing urban-rural inequality. Sixth, after controlling for other factors, financial development does not significantly affect urban-rural inequality, which contrasts with the finding in Zhang et al. (2003). Finally, urbanization is the main force to narrow urban-rural inequality in terms of elasticity—that is, the magnitude of the coefficient. Among the factors increasing urban-rural inequality, interprovincial migration has the largest elasticity, followed by employment restructuring, governmental participation in economic activities, the proportion of fiscal expenditure on culture, education, science, and health care, and the opening of the economy.

When studying income distribution or regional development in China, the three largest municipalities might be outliers, for they have much higher levels of openness, urbanization, nonstate units' share in employment, and GDP per capita than most other provinces. Therefore, we drop the data of the three municipalities in order to check the robustness of the results we get in Table 2. Equations (1) to (3) are comparable with their counterparts in Table 2, and equations (4) to (6) report the results instrumenting urbanization by lagged birth rate. Comparing the results with and without the municipalities we find: first, in all three estimations (1) to (3), urbanization does play a role in reducing urban-rural inequality, and the Hausman tests once again reject the endogeneity of urbanization. As with the results in Table 2, the variable *mpopr* enlarges the disparity; second, except for employment restructuring, the results do not change significantly in terms of both the signs and magnitudes of the coefficients. For the variable of employment restructuring, in equations (1) and (2), the coefficients are insignificantly positive, while in equation (3) the coefficient is significantly negative. Compared with the results in Table 3, we can conclude that in provinces other than the three largest cities, employment restructuring has stronger effects of compressing the income of urban people and/or raising the income of rural people.

In summary, although urbanization reduces urban-rural inequality, most of the other policy variables increase inequality. What is more, fiscal expenditure and agricultural loans help narrow the disparity, but, unfortunately, their shares tend to decline. For these reasons China has seen urban-rural inequality rise during most of the post-reform period.

Concluding Remarks

With the analysis on the provincial panel data of 1987–2001, and considering the endogeneity of the index of urbanization, we find that urbanization does narrow urban-rural inequality, though the effect could be greater without the *hukou* sys-

Table 3

Estimation Results (three municipalities excluded)

	F	E	RE	IV-	FE	IV-RE
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Nagripop	-0.519***	-0.523***	* –0.244***	-0.732**	-0.712***	-0.579***
	(0.130)	(0.124)	(0.051)	(0.300)	(0.270)	(0.151)
Mpopr	0.251***	0.252***	* 0.120***	0.282***	0.276***	0.152***
	(0.058)	(0.056)	(0.036)	(0.071)	(0.065)	(0.042)
Fdi	0.074***	0.074***	* 0.073***	0.087***	0.088***	0.102***
	(0.023)	(0.022)	(0.019)	(0.028)	(0.029)	(0.024)
Trade	0.105***	0.106***	0.026	0.109***	0.105***	0.043*
	(0.030)	(0.028)	(0.021)	(0.031)	(0.028)	(0.023)
Nsoeemp	0.136	0.136	-0.184***	0.179*	0.176*	-0.146***
	(0.087)	(0.086)	(0.048)	(0.103)	(0.100)	(0.054)
Fiscalexp	0.179**	0.182**	0.207***	0.150*	0.147*	0.180***
	(0.075)	(0.072)	(0.048)	(0.084)	(0.085)	(0.051)
Constr	-0.090***	-0.091***	* –0.064**	-0.087***	-0.085***	-0.059**
	(0.033)	(0.032)	(0.028)	(0.033)	(0.033)	(0.029)
Culture	0.148*	0.150*	0.127*	0.130	0.128	0.065
	(0.084)	(0.081)	(0.074)	(0.087)	(0.086)	(0.081)
Agri	0.00006		-0.002***	-0.0001	-0.001***	-0.002***
	(0.0005)		(0.0003)	(0.0006)	(0.0004)	(0.0004)
Agriloan	-0.001***	-0.001***	k	-0.001***		
	(0.0004)	(0.0004)		(0.0004)		
Loan	0.003			-0.020		
	(0.061)			(0.067)		
Constant	0.533	0.543	1.170***	1.217	1.106	2.259***
	(0.660)	(0.585)	(0.401)	(1.094)	(0.923)	(0.655)
R^2	0.342	0.342	0.175	0.336	0.336	0.145
F test	12.12	14.92				
Wald test- p value			0.0000	0.0000	0.0000	0.0000
Hausman test	24.85	15.65	8.93	0.62	0.63	12.41
(p value)	(0.0096)	(0.0745)	(0.4439)	(1.0000)	(0.9999)	(0.1910)
No. of obs.	292	292	383	292	292	383
No. of groups	25	25	26	25	25	26

Notes: Dependent variable-urban-rural inequality: id. See Table 2.

tem. Furthermore, interprovincial migration, economic opening, local government participation in economic activity, and the adjustment of the structure of fiscal expenditure tend to increase urban-rural inequality. The overall net effect of employment restructuring on urban-rural inequality is positive, but ambiguous when the three autonomous municipalities are excluded. In contrast, a higher proportion of expenditure on supporting agricultural production and loans to agriculture help narrow the disparity, but, unfortunately, their shares tend to decline. We also find that financial development does not have significant effects on urban-rural inequality.

With the results of empirical studies, we need to rethink the effects of China's urbanization and various policies on urban-rural inequality. Since the mid-1980s, China's countryside has not seen any substantial reforms, while nearly all the reform measures have occurred in cities or have mainly benefited urban residents. Based on the conclusions in this article, we argue that two aspects of the economic policies since the mid-1980s need serious rethinking. First, local governments have a strong incentive to carry out urban-biased policies that enhance short-run growth. However, it is not wise to neglect so large an income disparity that might cause deterioration in long-term social and economic development. Therefore, each level of the local government should adopt some measures to alleviate the negative effects of ongoing policies on urban-rural inequality. Opening-up and employment restructuring are economic trends in the reform of China, so local governments should resort to other policies to narrow urban-rural inequality by retreating from economic activities and adjusting the structure and direction of fiscal expenditures. More fiscal expenditures and loans should go to rural areas to support local agricultural production and the development of culture, education, science, and health care in the countryside. Second, in most provinces the household registration system and relevant administrative policies segmenting cities from the countryside are still upheld. In some provinces, the qualification policy to issue hukou actually urbanizes richer people first, but prevents more rural residents from sharing the benefits of urbanization. Such policies have limited the effects of urbanization on narrowing the urban-rural inequality gap. Until recently, China's central government has explicitly claimed that rural migration workers should be treated equally in cities, but the household registration system segmenting cities and countryside has not been substantially reformed. Any policies segmenting the urbanrural labor market only imply that local governments have placed more emphasis on the benefits of urban residents. Whether such policies protecting urban residents can be successfully revamped will be a great challenge to future policymakers.

The incidence of urban-rural inequality in China could also act as evidence that the policies adopted during economic reform and transition might be biased in the interests of the policymakers. Reform improves economic performance, but benefits a certain part of the population more. Thus, growth is achieved at the expense of increasing income disparity. This seems to be what we see in most of the transitional economies, testifying to a worldwide challenge for the successful transition of a political and economic system. In China's case, new leadership is attempting to adjust economic and social policy to help the poor experience an increased share in economic growth. As for urban-rural inequality, it is essential to let the rural people have more voice in the policymaking process.

Notes

1. It is the ratio of deflated per capita urban deposable income to per capita rural pure income. Though it is not an accurate measure of the urban-rural inequality (NBS 1994), it is the best proxy we have to construct the provincial panel data.

2. China Statistical Yearbook 2003 (Beijing: China Statistical Publishing House, 2003).

3. Since urban and rural population statistics are based on household registration, the percentage of urban population underestimates the level of urbanization.

4. When agricultural land is transformed into nonagricultural land, although some peasants become urban residents, the remaining ones do not have more land. Therefore, labor productivity in agriculture and the average income of rural residents do not rise.

5. For example, the "blue *hukou*" in Shanghai several years ago and the "qualification" system in some other provinces.

6. China Statistical Yearbook 2002 (Bejing: China Statistical Publishing House, 2003).

7. Statistical results show that, after controlling for other exogenous variables, lagged *birth* does not significantly affect urban-rural inequality, while it negatively affects urbanization. In the corresponding tests associated with equations controlling for the endogeneity of urbanization, the *p*-values of the significance of the birth rate's effects on urbanization are all 0.000.

8. Please refer to the Appendix for sources of the data.

9. The data of *mpopr* have minus values while *fdi* have 0s, so before taking logarithm, these two variables have been added—5 and 1, respectively. *Agri* and *agriloan* have values less than 1 and are multiplied by 10 before taking logarithm.

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Appendix: Data Sources

The data during 1987–98, if not otherwise indicated, are all from *Fifty-Year Statistical Materials in New China* (Beijing: China Statistical Publishing House, 1999). The data during 1999–2001, unless otherwise noted, are from *China Statistical Yearbook 2000*, 2001, and 2002 (Beijing: China Statistical Publishing House, 1999, 2001, and 2002).

The data of income and per capita GDP have been deflated by CPI in various provinces in various years. In the three largest cities, urban and rural CPIs are the same.

Except for Hebei, Heilongjiang, and Gansu, data of agricultural and nonagricultural population during 1999–2001 are from provincial statistical yearbooks. Population data of Hebei, Heilongjiang, and Gansu in 2000 are from *China Statistical Yearbook 2001*, the data in 1999 being the average of the neighboring two years, and the data in 2001 being predicted based on the data in 2000 and the growth rate during 1999–2000.

The data of FDI in Sichuan during 1987–1989 are from *China Statistical Yearbook* for the corresponding years. The data for FDI in Qinghai in 1988 and 2000 are the average of the neighboring two years.

The data of loans during 1999–2001 are from *China Financial Yearbook* 2002.

The data of FDI and international trade are transformed into RMB using the medium exchange rate in corresponding years that are from *China Statistical Yearbook* for the corresponding years.

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