Urbanization and rural-urban consumption disparity: evidence from China

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Abstract

The objective of this paper is to investigate the impacts of urbanization on narrowing the rural-urban consumption disparity in China. Adopting a provincial dataset from 1997 to 2014, a generalized method of moments (GMM) estimator is employed to reveal the impact of urbanization on the ratio of per capita consumption expenditure of the urban households to the rural households, along with other socioeconomic variables. Empirical results show salient relationship between increasing urbanization ratio and declining rural-urban inequality. Significant impact of education costs on increasing the rural-urban inequality is also observed. Other factors that increase the disparity include foreign investment and gross regional product indices. Industrial structure, costs of housing and health care are insignificant factors. The results of this study help better understand China's new urbanization development strategy.

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1. INTRODUTION

Much of China's transformation over the previous three decades was featured by two events: The opening up policy led to China's economic achievements and closer link with the world; the rapid urbanization process transformed one third of China's total population from rural to urban. The ratio of urban population to total population has increased from 28.5% in 1994 to 56.1% in 2015. While the number of aggregate urban population has more than doubled, not all residents have equal opportunities. Due to the existence of Hukou (home registration system), rural migrants tend to be associated with various economic and welfare constraints such as limited access to their children's education (Liu, 2005) and lack of respectable job opportunities (Afridi et al., 2015). Against this background, the new urbanization development strategy was proposed by Premier Li in 2013. The strategy focuses on bringing more inclusive growth opportunities for rural migrants, thus embracing demographic inflows from rural areas with more urban consumption demand.

While urbanization is generally associated with industrialization and thus productivity increase, some argue that China's urbanization level lags behind its industrialization (Lu and Wan, 2014). There is also increasing evidence that urbanization is conducive to reducing China's rural-urban income inequality (Lin and Chen, 2011, Lu and Chen, 2006, Wan, 2007). While recent policy debates on China's deepening economic reform concentrate on whether a supply-side reform should be taken, the new urbanization development strategy focuses on the demand side. Since the strategy proposes to stimulate urban consumption, whether continued urbanization will lead to declines in rural-urban consumption disparity remains unanswered.

This paper intends to investigate China's rural-urban disparity from the consumption perspective. We use urban consumption expenditure divided by rural consumption expenditure to indicate whether the urban-rural disparity enlarges or narrows over time. We include the contribution of secondary and tertiary industry to economic growth, as urbanization increases job opportunities in the manufacturing and service sectors. We consider the impact of foreign investment, which played an influential role in affecting China's regional income disparity. We control economic growth for obvious reason. We also control education, medical and housing expenses in the analysis. These three expenses are regarded as burdensome costs of Chinese, which may explain China's extremely high saving rates.

The remainder of this paper is organized as follows: The next section reviews relevant literatures on China's disparity and inequality issues. It is followed by a description of the empirical model and a presentation of the estimation results. We subsequently discuss the research implications and policy suggestions. Finally the article concludes.

2. LITERATURE REVIEW

Previous literatures on China's inequality issues focused on regional disparity (Chen and Fleisher, 1996, Fang et al., 2002, Fleisher and Chen, 1997, Hauser and Xie, 2005, Jian et al., 1996, Kanbur and Zhang, 2005, Wan, 2007, Xu and Zou, 2000, Zhang, 2006). Various factors explained the regional income inequality, including the uneven impacts of FDI on coastal and inland regions (Bao et al., 2002, Fleisher et al., 2010, Fu, 2004, Wan et al., 2007, Zhang and Zhang, 2003), different levels of infrastructure endowment (Démurger, 2001, Fan and Zhang, 2004), more favorable government policies towards coastal cities (Song et al., 2000), etc.

In the recent decade, there is growing interest in exploring the determinants of rural-urban disparity (Lu and Song, 2006, Yang, 1999). Speaking of urbanization, classical view was that city size expansion leads to greater income inequality between rural and urban area: A boost in labor quality

can bring forth an increase of real wage. Enhanced labor quality then stimulates urban growth. In the context of China, prior to late 1990s the levels of rural-urban disparity were more stable compared to inland-coastal disparity (Hussain et al., 1994, Kanbur and Zhang, 1999, Tsui, 1993). Since the 1990s, China experienced accelerated urbanization which may have increasingly contributed to the enlarging urban-rural disparity (Hu, 2002), showing a Kuznets–Williamson type of relationship between economic growth and income disparity during this period (Lu, 2002). Due to favorable policies for urban residents, the income gap between urban and rural areas seemed to be further enlarged in the aftermath of the rural household reform (Lu and Chen, 2006). Removal of Hukou barrier would improve labor mobility efficiency and reduce the urban–rural income inequality (Hertel and Zhai, 2006). Restrictions on rural-urban migration have limited employment opportunities to rural population and lowered the performance of rural migrants compared with their local urban counterparts as well (Afridi et al., 2015).

Education is basically regarded as conducive to bridging the rural-urban income gaps. Due to the long existing urban-biased policy, rural-urban identity stands out to be the most important factor affecting educational disparity in China (Knight and Shi, 1996, Qian and Smyth, 2008). Since 1998, the central government has initiated the higher education reform to merge more government sponsored, second-tier or below universities into first-tier universities. The reform reduced the geographically unequal distribution of education resource (Hannum, 1999, Hannum and Wang, 2006, Wu, 2010), allowing more young people from rural areas to access higher education resources. However, the mediating effect of education on income disparity seemed to be on the decline (Sicular et al., 2007, Wan et al., 2007). Higher education attainment was helpful for lowering the institutional barriers to students from rural areas, but at the expense of depressing real wages of all fresh graduates in urban areas.

Foreign investment is another influential factor on wage inequality. Due to the spillover effect of foreign investment on product differentiation and labor productivity enhancement (Chen et al., 2011, Ma, 2006, Wei et al., 2009, Whalley and Xin, 2010, Wu, 2001, Zhang and Felmingham, 2002), regional inequality in China tended to enlarge over the last two decades. While multinational enterprises brought forth wage premiums, they also depressed domestic firms' wage growth and thus enlarged the income gap (Chen et al., 2011). It was substantiated that income disparities may be attributed to the uneven distribution of foreign investment instead of itself (Wei et al., 2009).

Although various studies have investigated the root causes of rural-urban disparity, they were focused on income or earning inequality. Little is known about rural-urban disparity from the consumption perspective. Investigation of consumption disparity may be more important to understand China's current economic situation, as China has puzzling high saving rates which may be explained by precautionary saving and increasing private expenditures on housing, education and health care (Meng, 2003). Apart from examining the role of new urbanization strategy, it is the goal of this paper to integrate housing, education and health care expenses into the analysis.

3. DATA

All the data are compiled from the *China Statistical Yearbook* (State Statistical Bureau, 1998 - 2015). The dataset is constructed at the provincial level from 1997 to 2014. It is worth noting that the dataset used in the analysis is an unbalanced panel dataset, as some data are unavailable for some of the years. The dependent variable is *uere* which is defined as the ratio of per capita annual consumption expenditure of urban households to per capita consumption expenditure of rural households.

Explanatory variables used in this study include urbanization, level of globalization, inflation, price changes in the housing, education and health care sectors, economic development, sectoral composition, and education. These variables are selected according to the theoretical framework as discussed earlier in the literature review section.

Urbanization is examined by using the variable *urb* which is defined as the ratio of non-agricultural population to provincial population. The level of globalization is evaluated by *fipc* and *itpc*. *fipc* is the per capita value of investment in fixed assets belonging to foreign countries, while *itpc* is value of international trade per capita. The value of international trade is basically the total value of import (based on place of destination) and export (based on place of origin).

Inflation is measured by *grpi* which is defined as the gross regional product Indices calculated at constant prices (preceding year is 100). However, in order to examine the impacts of price change in greater detail, variables related to the "New Three Mountains" are compiled. The first variable is *cpie* which is the price change for expenses related education; the second variable is *cpihou* which shows the price change for housing expenses; and finally, it is *cpihc* which is defined as the change in price level for health care expenses.

There are two variables which are employed to examine the impacts of economic development in a province. The first one is *grppc* which is the gross regional product (GRP) per capita, while the second one is *grppn* which represents the economic significance of a province, and it is calculated by the ratio of provincial GRP to national GDP.

It is well known that industrialization and development in the service sector can stimulate economic growth; thus, it is of interest to determine the impacts of sectoral composition on inequality. Two variables are used in the analysis. The variable of *scs* is defined as the composition of the secondary industry in a province's GRP, while *sct* is the composition of the tertiary industry. The agricultural sector is not included so as to avoid dummy variable trap.

Regarding education, the variable *edufundpc* is constructed, which is defined as educational funding per capita in each province. Moreover, there are another two variables of education. The first one is *sepc* which is the ratio of total number of secondary school enrolments to provincial population. The second variable is *sgpc* which is calculated by dividing the total number of secondary school graduate by provincial population. It should be noted that it is better to use the number of population who are of secondary school enrolment age as denominator in calculation. However, because the data is not available, the number of the total provincial population is used in calculation.

All the data are adjusted for inflation by converting into 1997 constant prices using the provincial consumer price index (CPI) as the deflator. However, it is worth noting that the provincial CPI of Tibet in 1998 is not available; thus, CPI at the national level is used as deflator for Tibet in 1998.

4. METHODS

The model used in this paper is:

$$uere = \beta_k X_{it} + v_i + v_t + \varepsilon_{it}$$
(1)

where *uere* is the the ratio of per capita annual consumption expenditure of urban households to per capita consumption expenditure of rural households for province *i* at time *t*, β_k is the *k* x 1 vector of

the coefficients on X_{it}, X_{it} is the matrix for the provincial characteristics, v_i is the fixed effect for province i, v_t is the time effect and ε_{it} is the idiosyncratic disturbance. The idiosyncratic disturbances may have province-specific patterns of serial correlation and heteroskedasticity, but they are uncorrelated across the provinces (Roodman, 2006).

The system generalized method of moments (SGMM) estimator, which is developed by Arellano and Bover (1995) and Blundell and Bond (1998), is used in this paper to tackle the issue of endogeneity. It is worth noting that the SGMM estimator can be used to control for fixed effects and time effects; moreover, it can be used for unbalanced panels and multiple endogenous variables. In fact, Blundell and Bond (1998) report that SGMM should be employed if the variables are found to be non-stationary. All the variables as shown in previous section were tested for unit root. However, most of the variables could not pass the tests, thereby indicating that the variables are non-stationary. As a result, the SGMM estimator is used to tackle this issue.

Two-step SGMM is used in the study to tackle the thorny issue of heteroskedasticity. Moreover, a small sample correction for the two-step standard errors developed by Windmeijer (2005) is applied. Time dummies are used to capture the provincial-invariant but time-specific shocks and prevent the occurrence of contemporaneous correlation. Some data are not available from the publications, this may create gap whenever difference is calculated for two consecutive years; therefore, the orthogonal deviations approach is used in this research to tackle this problem (Arellano and Bover, 1995, Roodman, 2006).

Two approaches are applied in the study to handle the issue of instrument proliferation. The first technique is based on collapsing the blocks in the instrument matrix (Roodman, 2006, Roodman, 2009). Moreover, the number of lag is limited to two for the explanatory variable when preparing the instruments for the transformed equations, and only the present value is used as the instrument for the time dummies. All the explanatory variables are treated as endogenous as there is no prior knowledge regarding exogeneity of the independent variables.

The Hansen test is employed to evaluate the over-identifying restrictions. The Sargan test of over-identifying restrictions, which is suggested by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998), is also employed to evaluate the validity of the instruments. All these tests are conducted to make sure that the instruments are valid. Another test used in the analysis is the serial correlation test (that is the AR(2) test). This test can show whether second order serial correlation exists in the errors in the transformed equation. The Hansen test, Sargan test, and also the AR(2) test are carried out for all the specifications shown in the Results and Discussion section. All the findings presented in the next section are based on specifications which pass all these three tests.

5. RESULTS AND DISCUSSION

Table 1 shows the determinants of urban-rural consumption disparity. It is evident that urbanization ratios (*urb*) are significantly and negatively correlated with urban-rural disparity. Another factor that consistently shows salient effect is education cost (*cpie*). Foreign investment (*fipc*) has limited and positive impact on urban-rural disparity. Gross regional product index (*grpi*) has some positive impact as well. Other factors, such as the proportions of secondary (*scs*) and tertiary (*sct*) industry to gross regional product, total number of enrollment (*sepc*) or attainment (*sgpc*) in regular senior secondary schools, costs of housing (*cpihou*) and health care (*cpihc*) expense, do not have any significant effect. In order to study this relationship further, other control variables are added to the baseline models and different specifications are tested.

Results of the SGMM estimation are shown in Table 1. All the specifications are tested for AR(2), Sargan and Hansen tests. The results show that they all pass the tests and thus the instruments are valid in all specifications. It is shown in Model 1 that the coefficients of *fipc* and *cpie* are significant and positive, while the coefficient of *urb* is significant and negative. The coefficients of the other explanatory variables are insignificant.

TABLE 1
Determinants of urban-rural consumption disparity

	Model 1	Model 2	Model 3	Model 4
urb	-2.6593**	-3.8155**	-3.6880**	-3.4615*
fipc	9.9e+04***	31000		34000
ieyarpc	0.0000	0.0000	0.0000	
grpi	-0.0045	0.1045*	0.1046**	0.0086
cpie	0.0868*	0.0584*	0.0588*	0.0955*
cpihou		-0.0156	-0.0169	-0.007
cpihc		0.0156	0.025	0.0228
grppc		0.0000	0.0000	
grppn	-4.7635			-0.7994
scs	-0.0329	0.0227	0.019	-0.0235
sct	-0.0258	0.0157	0.0079	-0.0138
edufundpc	0.5713	-2.6939	-0.3558	
sepc			-96.4181	-21.1841
sgpc		-130		
Number of observations	310	310	310	341
Number of instruments	37	46	43	41
Sargan p-value	0.0502	0.0932	0.0654	0.0649
AR(2) p-value	0.7848	0.9359	0.9347	0.7211
Hansen p-value	0.6469	0.9445	0.8457	0.8799

Note: *indicates significant at 10% level, **indicates significant at 5% level, ***indicates significant at 1% level. SGMM estimator is used in regression analyses. AR(2) is Arellano-Bond test for AR(2) in first-differences. Both Sargan and Hansen are tests of the over-identifying restrictions. Due to space consideration, only the coefficient values of dependent variables are presented.
Source: Authors' calculations.

In Model 2, the variables of other two mountains, housing (*cpihou*) and health care (*cpihc*) expenses are then added to the baseline model. Comparing the results of Model 2 with Model 1, gross regional product index (*grpi*) becomes significant while foreign direct investment (*fipc*) becomes insignificant in model 2. The coefficients of *urb* and *cpie* are still significant. Other explanatory variables remain insignificant.

Model 2 indicates that the spillover effect of foreign investment may be insignificant for urban-rural consumption disparity. In Model 3 this notion is strengthened, as the impact of urbanization ratio remains significant after removing the impact of foreign investment. As the cost of education has significant and positive relationship with urban-rural disparity, education fund (*edufundpc*) is controlled in Model 1 to Model 3. Its impact is not significant. After removal of *edufundpc,* the effect of education cost and urbanization ratio remains salient in Model 4.

What stands out from the estimation results is that increasing urbanization ratio is negatively associated with urban-rural consumption disparity. In other words, current government strategy of further increasing urbanization ratio is conducive to reducing the urban-rural disparity. According to Premier Li, new urbanization aims to stimulate consumption and investment demand, as well as creating more job opportunities. The estimation result indicates that consumption may increase more

in the rural area. Compared with Justin Lin's proposal of "New Countryside" in 2006 which focused on increasing rural infrastructure investment for job creation in the rural area, new urbanization refers to more job creation in the urban area to attract inflows from rural migrants. This new urbanization strategy is supported by the expansion of higher education resources. Since 1998, the government has initiated the higher education reform to increase the number of public universities available for entrance. Expansion of universities allowed more young people from rural areas to access higher education resources which enhanced their labor productivity. The higher education reform is timely consistent with China's economic transition upon entering the World Trade Organization, when increasing employment opportunities with world leading companies arose within the nation. Consequently, urbanization ratio has increased saliently.

While more city jobs may lead to a lack of workforce in the rural area, the new urbanization aims at enhancing rural productivity through mechanical upgrading, which may accelerate the outflow of rural residents. While there will be increasing rural-origin workers in the city, their land ownership remains in the rural area. Hiking housing prices make it more difficult for rural migrants to settle down in the city. Therefore, increase in wages for rural migrants may lead to higher consumption in the rural area, thus fulfilling the goal of making peasants rich. Indeed, at different public holidays the huge flows of Chinese almost make airline and highway transportation congested. A major proportion of travelers are from rural areas who intend to get home for family reunion.

Other than urbanization ratio, estimation results also shed light on understanding the effects of expense burdens. Among major household expenses, only education cost has significant and positive relationship with urban-rural inequality. The impacts of housing and health care are insignificant. As more rural residents choose to work in the cities, their wage levels exceed their counterparts who continue working in the rural areas. This has led to a deficiency of workforce in the rural areas, thus adding to the income gaps between urban and rural residents. Because of wage differentials, compared with urban residents the proportion of education costs for rural residents are higher. The poor education resource allocation to the rural areas makes it more difficult for rural residents to change their life opportunities through accessing better education. Even rural migrants face unequal opportunities for their descendants. Due to the hukou constraint, the children of rural migrants may not be able to access the same schools as their urban counterparts. In fact, schools in cities gave far lower priority to admit rural hukou children, who received little or virtually no government funding to support the high tuition fees of attending primary and secondary schools (Wahnschafft and Wei, 2015). As indicated by Table 1, increasing education cost is significantly associated with increasing urban-rural consumption disparity.

It is worth noting that housing and health care costs do not appear to have any significant impact on urban-rural disparity. Regarding housing costs, housing price escalations take place in the urban area. Over the last two decades, commodity housing reform has turned the previous welfare housing system into a market oriented pricing system for the urban housing sector. Enhanced infrastructure development and overflow of liquidity have substantially boosted housing prices in major cities. While housing prices become increasingly unaffordable for urban residents, the rural areas are not affected. Due to the collective land ownership system, rural residents construct their own housing on their reserved pieces of land. Without a separation of land ownership and land use rights as for their urban counterparts, rural residents do not need to pay extra costs for rising land leasing fees. Therefore, the impact of housing price on consumption becomes static for rural residents. This may explain why in Table 1 the cost of housing is insignificant.

Health care expense is another factor that worth further exploring. Contrary to the abovementioned circumstance of housing expense, health care expense means much more for rural residents

compared with their urban counterparts. China's health care system is dual track with a preference for urban residents. As long as urban residents enter their career, a labor contract with detailed health care insurance and fringe benefits is provided, commonly known as the *Wuxianyijin* (five types of insurance covering health, unemployment, retirement, fertility and accident, and provision of housing provident fund). This insurance system works well for protecting the basic needs of medical treatment, thus relieving the burden of health care expenditure for urban residents. Although funding gaps and empty individual accounts have imposed challenges to the sustainability of urban pension system, the coverage is still higher compared with the low coverage rate for rural farmers (Wang, 2006). Due to limited medical resources, rural residents are not entitled to health care benefits, although they are aging rapidly. They may choose to attend local private clinics, or queue for long in public hospitals on their own charge. Hence the expense of medical care can be huge for rural residents but limited for urban residents. This may help explain the insignificant impact of health care expense in Table 1.

Another noteworthy finding is that the coefficient of *grpi* is partially significant only. This may reflect the structural changes in China's economic growth pattern over the last two decades. Since the opening up policy, China's economic development has been largely underpinned by export and foreign investment. Joining the World Trade Organization has speeded up the establishment of China as a world assembly center. However, such economic transition is associated with deteriorating environment and depleting natural resources. To maintain sustainable development, the government has initiated the harmonious society development strategy since 2004. Local officials' evaluation and promotion criterion was changed so that GDP growth was no longer the only performance indicator. This may help explain the partially insignificant effect of *grpi*.

6. CONCLUDING REMARKS

Various previous studies have revealed China's enlarging income gaps between urban and rural households (Hertel and Zhai, 2006, Knight and Gunatilaka, 2010, Sicular et al., 2007, Yang, 1999, Zhu, 2002). A few studies maintained that rural households' incomes are catching up (Lu, 2002, Tao Yang and Zhou, 1999). However, strikingly little studies have taken the expense angle to explore the urban-rural disparity, particularly in the different contexts of urban and rural residents' social security and welfare systems. Considering the institutional differences such as hukou barrier and collective landownership, rural residents' expenditures may saliently differ from their urban counterparts. Against this background, this study employs new indicators for evaluating rural-urban disparity. Based on a generalized method of moments (GMM) estimator, the impacts of various socioeconomic variables on the ratio of per capita disposable expenditures of the urban households to the rural households is examined, covering the period of 1997 to 2014.

The empirical results reveal that urbanization ratio has significant effect on reducing China's urban-rural expense inequality, echoing previous work focusing on urban-rural income inequality reduction (Lin and Chen, 2011, Lu and Chen, 2006, Wan, 2007). Consistent with the new urbanization development strategy, this study has provided evidence that further urbanization could not only boost economic growth, but also reduce urban-rural disparity through stimulating higher rural household expenditure. While China maintains high saving rates, current global economic environment does not allow the nation to continue the previous export oriented growth strategy which increased regional disparity. The results of this study also reveal this point, as foreign investment is merely weak salient whereas the impact of export and import is insignificant. Hence contrary to the recent debate of supply side reform, this study indicates that demand side reform in terms of urbanization may be more essential to reduce the increasing urban-rural gaps for more sustainable economic development. The new urbanization strategy should be more embracing to rural migrants, such that "An inclusive

and efficient labor market would allow migrants to find the best matches for their talents and would provide the supportive training and learning infrastructure to help them continue this productive matching as the economy evolves" (Wahnschafft and Wei, 2015).

Some new findings arise from the empirics, shedding light on government's social policies. Out of the major expenditures of Chinese, only education expenditure has salient and negative impact on urban-rural disparity. While the education index stands for general education, increasing education fund for universities does not alter such relationship, indicating that the allocation of education resources should be more focused on primary and secondary schools to bridge the gap of unequal opportunities to access fundamental education between urban and rural young generations. Industrial structure in terms of secondary and tertiary sector did not affect urban-rural consumption disparity, indicating that social welfare reform (i.e., higher transfer payment in education for rural areas) may be more effective than manufacturing sector upgrading to reduce urban-rural disparity.

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