How Large is the Urban-Rural Income Gap in China?

Jinjun Xue, Wenshu Gao*

Abstract: China's current official official household survey has failed to effectively cover the rural-to-urban migrants, which overstates the income of urban residents and understates the income of rural residents, and then overstates the urban-rural income gap in China. Our survey shows that the urban household survey basically neither cover the migrant households (missing households), nor the migrant workers who have not any economic ties with their rural families (missing persons). Due to these missing, the urban-rural income gap is overstated by 13.65%. If we further consider that the income records made by the rural household survey miss the income information of some persons who are working and living in urban areas (missing records), the urban-rural income gap will be totally overstated by 41.26%. For these reasons, China's urban-rural income gap will be 2.29-2.84 times in 2010, smaller than the official data 3.23 times. This paper also develops a mathematical model to adjust the deviation.

Key words: urban-rural income gap, rural labor migration, urban and rural household survey, personal income statistics, China

I. Introduction

The large income gap between urban and rural residents is a very serious problem in China's economic development. In 2009, the gap was 3.33 times (NBSC, 2010), the highest in the history. The gap declined slightly to 3.23 times in 2010 (NBSC, 2011). Moreover, the rural-urban income gap has been widening continually since the mid-1980s. Some study has even pointed out that China's rural-urban income gap is the highest in the world (Li Shi and Yue Ximing, 2005). However, recent study indicates that China's official household survey system has failed to effectively cover the rural-to-urban migrants, which overstates the income of urban residents and understates the income of rural residents, and then overstates the urban-rural income gap in China. (Cai Fang, Wang Meiyan, 2009). All this has raised such a question: How large is China's urban-rural income gap?

China's urban and rural residential income statistics are based on the national urban and rural household survey system. The statistical departments of the State, based on the random sampling principle, select certain number of urban and rural households nationwide and acquire income data of urban and rural residents by asking those households to regularly record their economic activities (the so-called accounting households). Among those households, the urban households not only include local urban residents, but also those from outside who have lived there for more than six months in the past one year. The rural households, in the same vein, include not only those permanent local rural residents, but also migrants who have moved to that locality and stayed there for a long time (more than one year), although they do not include those households

* Jinjun Xue, professor, Nagoya University, Japan, e-mail: setsu@soec.nagoya-u.ac.jp; Wenshu Gao, associate professor, Institute of Population and Labor Economics, Chinese Academy of Social Sciences, email: gaows@cass.org.cn.

that have all moved out¹.

China is facing a major challenge in acquiring its urban and rural income statistics, i.e., there are more than 100 million migrant workers moving from rural to urban areas to work. In 2010, the number had reached 153 million (Ministry of Human Resources and Social Security, 2011). The income level of those migrant workers in the cities is lower than that of local urban residents but higher than that of rural residents. Therefore, whether that group of people is taken as urban residents or rural residents will directly influence the computed results of the urban-rural income gap. According to China's current official rural household survey system, those who have moved out of the rural areas to work are still seen as members of their rural families² so long as they are "economically an inseparable part of their families". It means for those migrant workers moving to cities, so long as not all of their family members have moved out and they are "economically an inseparable part of their families", they are seen as family members of rural households and included in the scope of rural household survey despite the fact that they live and work in urban areas when the urban and rural household survey is conducted. Their income, therefore, should also been taken as rural residential income. Those migrant rural workers in the cities who are no longer "economically an inseparable part of their families" should be seen as urban households and included in the urban household survey.

Therefore, when the urban and rural residential income statistics are collected, people moving to the cities from the countryside can be divided into three groups. One refers to those who, together with all their family members, have moved to the urban areas and they should be included in the urban household survey. The second refers to those whose family members have not all moved to the urban areas and who are no longer "economically an inseparable part of their families". They should be included in the urban household survey. The third refers to those whose family members have not all moved to the urban areas but who remain "economically an inseparable part of their families". They should be included in the rural household survey.

However, the large number of rural laborers migrating to the urban areas in China and the difficulty to collect accurate information of their income due to their high mobility have seriously affected the data collection to gauge the urban-rural income gap. To study the impact of the rural-to-urban migration on the statistics of the urban-rural income gap, the Institute of Population and Labor Economics at the Chinese Academy of Social Sciences conducted a questionnaire-based survey in two regions in Zhejiang and Shaanxi provinces in May 2010. The survey includes not only the 200 urban accounting households and 300 rural accounting households designated by NBSC, but also 400 rural migrant households in the urban areas as well as face-to-face interviews of 50 rural accounting households. This paper, through analysis of the above data, studies the impact of the rural-to-urban migration on the statistics of the urban-rural income gap.

II. China's rural-to-urban migration and the problems in its urban and rural residential income statistics

The impact of the large-scale rural-to-urban migration on China's urban and rural residential income statistics is mainly reflected in the following phenomena. First, the rural population that

NBSC: Urban Household Survey Guideline, http://www.stats.gov.cn/tjzd/gjtjzd/t20090601_402562259.htm;
NBSC: Rural Household Survey Guideline, http://www.stats.gov.cn/tjzd/gjtjzd/t20090601_402562258.htm.

NBSC: Explanations of the Main Statistical Indicators Regarding People's Life, China Statistical Yearbook 2010, China Statistics Press, 2010.

have moved all of their families to the urban areas are basically not included in the urban household survey, which means there is a problem of "missing households". Second, those migrants who no longer have close economic ties with their rural families are not included in the urban household survey after they are excluded from the rural household survey, which means there is a problem of "missing persons". Third, the income of those rural family members that have moved out to work has failed to be fully recorded or simply not been recorded, which means there is a problem of "missing records". Those phenomena inevitably affect the statistics regarding urban and rural income and in turn affect the gauging of urban-rural income gap.

1. Rural migrant households in cities excluded from urban household survey

China has seen a large number of its rural people moving all their family members to the urban areas. As analyzed above, those migrants that have moved all their family members to the cities are no longer included in the rural household survey and should be included in the scope of the urban household survey and their family income should be taken as part of the overall urban residential incomes. In reality, however, the existing urban household survey does not cover those migrant households.

Our survey found that in the 100 urban "accounting households" in Zhejiang province, only one has had all family members move to the urban areas, accounting for 1 percent of all the households. In the Shaanxi survey, there's not a single such household (See Table 1). That means among the "accounting households" in the two provinces, only 0.5 percent of them are migrant households. Statistics show, however, that in the two surveyed regions, the proportion of rural migrants in the urban areas to their overall population has been 71.98 percent and 29.28 percent, and 8.03 percent and 41.15 percent of those migrant workers have moved all their family members to the urban areas¹. Obviously, the urban household survey in those two regions has basically excluded the migrant households who should have been included.

Furthermore, we have analyzed the NBSC data of the national urban household survey in 2009. The analysis found that among the total 10,000 accounting urban households, only 81 households are migrant households, accounting for 0.81 percent of the total (Table 1). Meanwhile, there were 29.66 million migrants that lived in the urban areas together with all their family members, accounting for 20.41 percent² of the total of 145.33 million rural migrants in the urban areas. Since the migrants had accounted for 23.36 percent of the total urban population (622 million) that year, the proportion of migrant households that have moved all their family members to the urban areas should have accounted for about 5 percent of all urban households. Therefore, seen from the national perspective, the urban household survey has roughly left out all those rural migrant households. We define such a phenomenon as the problem of "missing households" in the urban household survey.

¹ Proportion of rural population migrating to the urban areas to overall urban population is calculated based on migrant population and local urban and rural population statistics provided by local statistical departments in those surveyed regions. Proportion of migrant workers with all their families in town are calculated based on migrant population survey data.

² Farmers-turned Workers Monitoring and Survey Report by the rural social and economic survey section of the NBS, published in China Population and Labor Issue Report No. 11, organized by Cai Fang, Social Sciences Academic Press, 2010.

Table 1. Distribution of "accounting households" in China's urban household survey

| | Zhejiang | | Shaanxi | | National | |
|---------------|-------------|------------|-------------|-----------|-------------|------------|
| | Number | Proportion | Number | Proportio | Number | Proportion |
| | (household) | (%) | (household) | n (%) | (household) | (%) |
| Local urban | | | 100 | 100.00 | | |
| household | 87 | 87.00 | | | 9512 | 95.12 |
| Local rural | | | 0 | 0.00 | | |
| household | 8 | 8.00 | | | 265 | 2.65 |
| Migrant | | | 0 | 0.00 | | |
| urban | | | | | | |
| household | 4 | 4.00 | | | 142 | 1.42 |
| Migrant rural | | | 0 | 0.00 | | |
| household | 1 | 1.00 | | | 81 | 0.81 |
| Total | 100 | 100.00 | 100 | 100.00 | 10000 | 100.00 |

Note: Zhejiang and Shaanxi refer to surveyed regions in those two provinces. Data are from the "urban-rural income gap survey project" carried out by the Institute of Population and Labor Economics of CASS in May, 2010. National data are calculated by the authors based on the sampling data of the urban household survey by the NBSC in 2009.

2. The migrant workers who have not any economic ties with their rural families have not covered by urban household survey

The rural migrants that have moved all their family members to the urban areas should undoubtedly be included in the urban household survey. But should those migrant workers who are not with their family members in the cities be included in the urban or rural household survey? It depends on the real situation of those workers. According to China's existing household survey system, for those migrant workers that are not with all their family members in the urban areas, if they are single and one of their parents is or both of them are in the countryside, or if they are married and their spouse is in the countryside, then in practice such workers should be included in the rural household survey. For other migrant workers who have not had all their family members move to the cities, since they are no longer "economically an inseparable part of their families", they should not be seen as rural household members and should not be included in rural household survey. To simplify our discussion, we refer to the latter as "migrants that should have been surveyed".

Statistics show, however, that those migrants that have been excluded from rural household survey have not been covered by urban household survey. In the surveyed areas in Zhejiang and Shaanxi provinces, such workers account for 30.09 percent and 7.43 percent, respectively, of urban population (Table 2.). But in those regions, migrant workers account for only 1.29 percent and 0.56 percent of the urban "accounting households". Therefore, seen from the survey, it is clear that the "migrants that should have been surveyed" have roughly all been left out by the existing urban household survey. We call that "missing people" in urban household survey.

Table 2. Proportion of migrant workers in total urban population (%)

| | Zhejiang | | Shaanxi | | |
|---|--------------|------------|--------------|------------|--|
| | Distribution | Proportion | Distribution | Proportion | |
| Migrant households with all their families in town | 8.03 | 5.79 | 41.14 | 12.04 | |
| Migrants with husband or wife in rural areas | 2.17 | 1.56 | 1.44 | 0.42 | |
| Migrants as unmarried children of rural households | 47.99 | 34.54 | 32.06 | 9.39 | |
| Migrants that should have been surveyed | 41.81 | 30.09 | 25.36 | 7.43 | |
| Total | 100.00 | 71.98 | 100.00 | 29.28 | |
| Local urban population of surveyed locality (10,000 people) | | 17.91 | 95.25 | | |
| Number of migrants of surveyed locality (10,000 people) | | 46.00 | 3 | 38.20 | |
| Overall urban population of surveyed locality (10,000 people) | | 53.91 | 130.45 | | |

Source: The Institute of Population and Labor Economics of CASS, the urban-rural income gap survey project, May, 2010.

3. The income of those rural family members that have moved out to work has failed to be fully recorded or simply not been recorded

According to China's current official household survey system, for those rural family members who work outside, although they live for more than 6 months a year outside the countryside, so long as they send the majority of their income back home and therefore are economically an integral part of their family, they can be seen as rural household population. It is the basis for calculating the per capita income of rural household income.

As to how to define "economically an inseparable part of their families", the statistical department has failed to provide an explicit guideline. Some studies point out that in the practice of household survey, grassroots surveyors generally take the conjugal relation as the basis for "economically an inseparable part of their families" and the relation between parents and under-age children is excluded, let alone brotherhood and sisterhood (Cai Fang, Wang Meiyan, 2009). It means only migrant workers with their spouse left in the rural areas can be seen as members of rural households and included in rural household survey. Our survey shows that in the practice of rural household survey, apart from the conjugal relation, the unmarried children of rural families that work outside the countryside are basically included in the rural household survey as rural family members. There are indeed records of income earned by such people in the original data of rural "accounting households" in those surveyed regions.

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¹ NBSC: Explanations of the Main Statistical Indicators Regarding People's Life, China Statistical Yearbook 2010, China Statistics Press, 2010.

But the problem is, although such workers are seen as rural family members in the rural household survey, their income has failed to be fully recorded. We have got data of the real income of those workers working outside the rural areas in face-to-face interviews of 50 rural "accounting households". We compared their real income with their recorded income and found that 47.15 percent of the real income of rural family members working outside the countryside has been missing and for couples with husband or wife working outside the rural areas, the proportion is 29.81 percent while that for unmarried children of rural families working outside the countryside is as high as 59.22 percent (Table 3.).

Our survey shows that the most critical factor behind the missing income of rural family members working outside the countryside is that when rural accounting households record their economic activities, they only take the money brought or remitted back by their family member working outside the countryside as the income of that worker. In reality, however, what should be recorded is the total income of that worker. Therefore, such "missing income" is set to lead to underestimation of rural residential income.

Table 3. "Missing income" of rural family members working outside the countryside (yuan/a year)

| | Paper | Real income | Missing | Proportion |
|-------------------------------|----------|-------------|----------|------------|
| | income | | income | (%) |
| Migrant workers with their | | | | |
| husband or wife left in rural | 11800.00 | 16811.11 | 5011.11 | 29.81 |
| areas | | | | |
| Migrant workers working | | | | |
| outside the rural areas as | 8245.46 | 20218.18 | 11972.73 | 59.22 |
| unmarried children of rural | 6243.40 | 20216.16 | 11972.73 | 39.22 |
| families | | | | |
| Total | 10418.75 | 19712.50 | 9293.75 | 47.15 |

Source: The Institute of Population and Labor Economics of CASS, the urban-rural income gap survey project, May, 2010.

III. Rural-to-urban migration and the deviation of urban-rural income gap statistics in China

As the urban and rural residents survey failed to effectively deal with the rural-to-urban migration issue, which have brought impact on the statistics of China's urban-rural income gap, we conduct the following analysis.

1. The calculation of urban-rural income gap in the case of rural-to-urban migration China's urban-rural income gap can be expressed as:

$$Gap_{real} = \frac{\bar{I}_u}{\bar{I}_r} \tag{1}$$

Among which, Gap_{real} represents the "real" urban-rural income gap, \bar{I}_u represents the per capita disposable income of urban residents and \bar{I}_{rs} the per capita net income of rural

residents.

We use TI_u represent the total income of urban residents and P_u the total urban population and TI_r the total income of rural residents and P_r the total rural population, we will have:

$$Gap_{real} = \frac{TI_u/P_u}{TI_r/P_r} \tag{2}$$

The analysis above shows that the population included in the urban household survey (P_u) contains urban local population (P_{ul}) and the rural migrant households that have moved all their family members in cities (P_{um_1}), as well as the rural migrants without economic ties with their rural families (P_{um_2}). Therefore, the total income of urban residents (TI_u) can be expressed as the total sum of the incomes of the urban local residents (TI_{ul}) and migrant households (TI_{um_1}) and the rural migrants without economic ties with their rural families (TI_{um_2}). At the same time, the population included in the rural residents income statistics (P_r) contains rural local (non-migrated) residents (P_{rl}) and rural population migrated into cities while with economic ties with their rural families, i.e. the rural family members working in cities (P_{um_3}). Therefore, the total income of rural residents (TI_r) can be expressed as the total sum of incomes of the rural local residents (TI_{rl}) and rural family members working in cities (TI_{rm_3}). Thus, we have:

$$Gap_{real} = \frac{(TI_{ul} + TI_{um_1} + TI_{um_2})/(P_{ul} + P_{um_1} + P_{um_2})}{(TI_{rl} + TI_{um_3})/(P_{rl} + P_{um_3})}$$
(3)

In rural household income survey the missing of income records is common for the rural family members who work in cities, which must be considered in the calculation of urban-rural income gap. Because the total income for this population (TI_{um_3}) can be expressed as the sum of recorded total income $(T'I_{um_3})$ and missing total income (TI''_{um_3}) . Therefore, equation (3) can be further expressed as:

$$Gap_{real} = \frac{(TI_{ul} + TI_{um_1} + TI_{um_2})/(P_{ul} + P_{um_1} + P_{um_2})}{(TI_{rl} + TI'_{um_2} + TI''_{um_2})/(P_{rl} + P_{um_2})}$$
(4)

If the total incomes in above equation are respectively expressed as the product of the

respective average income and its corresponding population, we have:

$$Gap_{real} = \frac{(\bar{I}_{ul}P_{ul} + \bar{I}_{um_1}P_{um_1} + \bar{I}_{um_2}P_{um_2})/(P_{ul} + P_{um_1} + P_{um_2})}{(\bar{I}_{rl}P_{rl} + \bar{I}'_{rm_3}P_{um_3} + \bar{I}''_{rm_3}P_{um_3})/(P_{rl} + P_{um_3})}$$
(5)

Among which, \bar{I}_{ul} , \bar{I}_{um_1} and \bar{I}_{um_2} respectively represents the average income of urban local residents, rural migrant households in cities and rural migrants having economic ties with their rural families. \bar{I}_{rl} represents the average income of rural local residents. \bar{I}'_{rm_3} , respectively represents the recorded incomes and the average missing incomes of those rural family members working in cities.

2. The current official statistics overestimated the urban-rural income gap.

As the foregoing analysis, because of the "missing households", "missing persons", and "missing records", the urban-rural income gap derived from the current official household survey (Gap_{statis}) can be expressed as:

$$Gap_{statis} = \frac{(\bar{I}_{ul}P_{ul})/P_{ul}}{(\bar{I}_{rl}P_{rl} + \bar{I}'_{rm_3}P_{um_3})/(P_{rl} + P_{um_3})}$$
(6)

Now we compare the deviation of the statistical urban-rural income gap (Gap_{statis}) with the real number (Gap_{real}). We use α_1 , α_2 , α_3 , α_4 represents the respective proportion of migrant households, rural migrant workers, rural family members working in cities and rural non-migrated residents to the urban local residents, and use β_1 , β_2 , β_3 , β_4 represents the respective proportion of per capita average incomes of these four categories of populations to that of the urban local residents, and use γ_1 and γ_2 represents the respective proportion of per capita average recorded income and per capita missing income of the rural family members working in cities to per capita average income of the urban local residents. Thus, equation (5) can be expressed as:

$$Gap_{real} = \frac{(\bar{I}_{ul}P_{ul} + \beta_{1}\bar{I}_{ul_{1}}\alpha_{1}P_{ul_{1}} + \beta_{2}\bar{I}_{ul}\alpha_{2}P_{ul})/(1 + \alpha_{1} + \alpha_{2})P_{ul}}{(\bar{I}_{rl}P_{rl} + \bar{I}'_{rm_{3}}P_{um_{3}})/(P_{rl} + P_{um3}) + \bar{I}''_{rm_{3}}P_{um_{3}}/(P_{rl} + P_{um3})}$$

$$= \frac{\frac{1 + \alpha_{1}\beta_{1} + \alpha_{2}\beta_{2}}{1 + \alpha_{1} + \alpha_{2}}}{1 + \frac{\gamma_{2}\bar{I}_{ul}\alpha_{3}P_{ul}}{\gamma_{1}\bar{I}_{ul}\alpha_{4}P_{ul} + \gamma_{2}\bar{I}_{ul}\alpha_{3}P_{ul}}} \cdot \frac{(\bar{I}_{ul}P_{ul})/P_{ul}}{(\bar{I}_{rl}P_{rl} + \bar{I}'_{rm_{3}}P_{um_{3}})/(P_{rl} + P_{um3})}$$

$$= \frac{1 + \alpha_{1}\beta_{1} + \alpha_{2}\beta_{2}}{1 + \alpha_{1} + \alpha_{2}} \cdot Gap_{statis}$$

$$1 + \frac{\gamma_{2}\alpha_{3}}{\gamma_{1}\alpha_{4} + \gamma_{2}\alpha_{3}} \cdot Gap_{statis}$$

$$1 + \frac{\gamma_{2}\alpha_{3}}{\gamma_{1}\alpha_{4} + \gamma_{2}\alpha_{3}}$$

Let:
$$\frac{1+\alpha_1\beta_1+\alpha_2\beta_2}{1+\alpha_1+\alpha_2} = A \quad \frac{\gamma_2\alpha_3}{\gamma_1\alpha_4+\gamma_2\alpha_3} = B$$

We have:
$$Gap_{real} = \frac{A}{1+B} \cdot Gap_{statis}$$
 (7)

Because per capita average incomes of the rural migrants who have moved all their family members in to cities and rural migrant workers are both lower than that of the urban local

residents, i.e.
$$0 < \beta_1 < 1$$
, $0 < \beta_2 < 1$, and $\alpha_1 > 0$, $\alpha_2 > 0$, so $A < 1$. Because $\gamma_1 > 0$, $\gamma_2 > 0$, $\alpha_3 > 0$, $\alpha_4 > 0$, we can get $B > 0$.

Therefore:
$$\frac{A}{1+B} < 1$$

That is:
$$\frac{Gap_{real}}{Gap_{statis}} = \frac{A}{1+B} < 1$$
(8)

Equation (8) shows that the existing urban and rural household survey failed to effectively deal with the rural-to-urban migration issue, which lead to it that statistics of the urban-rural income gap was higher than the actual one. In other words, current official statistics overestimated the urban-rural income gap in China.

IV. The re-calculation of urban-rural income gap in China

Based on above analysis and applying the survey data, we specifically examined the deviation of the urban-rural income gap statistics caused by rural-to-urban migration not being taken full account of in the current official urban and rural household survey and re-calculated the urban-rural income gap in China.

Applying survey data, we can calculate the specific values of the corresponding parameters in the equation (6) (Table 4). Substitute the parameter values into the equation (6) and get

$$\frac{Gap_{statis}}{Gap_{real}}$$
 = 1.4126. In other words, the current official urban and rural residents income survey

failed to effectively deal with the impact of the rural-to-urban migration, which has lead to the urban-rural income gap was overestimated by 41.26%. Since the statistics of the urban-rural income gap was 3.07 times, the actual one should be 2.17 times (Table 4). Assuming this survey results can represent the overall situation in China, the actual urban-rural income gap in 2010 was only 2.29 times, comparing to the 3.23 times in statistics

Table 4 Urban-rural income gap estimation

| | Zhejiang | Shaanxi | Sum |
|---|----------|----------|----------|
| | Province | Province | |
| Per capita average income (Yuan/year) | | | |
| per capita disposable income of urban local residents | 26121.25 | 16566.21 | 18084.82 |

| per capita disposable income of migrant households with all | 10779.33 | 8776.12 | 9156.93 |
|---|----------|----------|----------|
| members migrated into cities | | | |
| per capita income of migrant workers who have not any | 12125.02 | 11671.06 | 11972.90 |
| economic ties with their rural families | | | |
| per capita recorded income of rural family members | 16581.18 | 4262.82 | 4435.28 |
| working in cities | | | |
| per capita net income of rural non-migrated residents | 16417.06 | 6937.53 | 9315.94 |
| per capita missing incomes of rural family members | 14792.28 | 3803.06 | 3956.92 |
| working in cities. | | | |
| per capita statistical average income of rural residents in | 12594.80 | 4353.20 | 5897.68 |
| Population (Ten Thousand) | | | |
| population of urban local residents | 17.91 | 95.25 | 113.16 |
| population of migrant households with all members | 3.69 | 15.72 | 19.41 |
| migrated into cities | 3.09 | 13.72 | 17.41 |
| population of migrant workers who have not any economic | 19.23 | 9.69 | 28.92 |
| ties with their rural families | 19.23 | 9.09 | 20.92 |
| population of rural family members working in cities | 1.31 | 91.96 | 93.27 |
| population of rural non-migrated residents | 63.89 | 190.73 | 254.62 |
| Relevant parameters | | | |
| | 0.21 | 0.17 | 0.17 |
| $lpha_{_1}$ | 0.21 | 0.17 | 0.17 |
| | 1.07 | 0.10 | 0.26 |
| $lpha_2$ | 1.07 | 0.10 | 0.26 |
| | 0.07 | 0.07 | 0.02 |
| $lpha_{\scriptscriptstyle 3}$ | 0.07 | 0.97 | 0.82 |
| | 2.57 | 2.00 | 2.25 |
| $lpha_{\scriptscriptstyle 4}$ | 3.57 | 2.00 | 2.25 |
| 0 | 0.41 | 0.52 | 0.51 |
| $oldsymbol{eta}_1$ | 0.41 | 0.53 | 0.51 |
| 0 | 0.46 | 0.70 | 0.66 |
| $oldsymbol{eta}_2$ | 0.46 | 0.70 | 0.66 |
| | 0.42 | 0.01 | 0.25 |
| ${\mathcal Y}_1$ | 0.63 | 0.26 | 0.25 |
| | 0.74 | 0.24 | 0.00 |
| ${\mathcal Y}_2$ | 0.54 | 0.21 | 0.22 |
| Urban-rural income gap | | | |
| Statistical urban-rural income gap | 2.07 | 3.81 | 3.07 |
| Overestimating rate of urban-rural income gap (%) | 46.84 | 40.71 | 41.26 |
| Actual urban-rural income gap | 1.41 | 2.71 | 2.17 |
| | 1 | l . | ' |

Note: The income data in column "Sum" were acquired on the basis of per capita average incomes of Zhejiang and Shaanxi after the populations of these two areas were weighted.

Source: The Institute of Population and Labor Economics of CASS, the urban-rural income gap survey project , May, 2010.

Some people may argue that the "missing records" of those rural family members working in cities were difficult to know, then we might assume that there was no missing, i.e. $\gamma_2 = 0$, so we

could get
$$\frac{Gap_{statis}}{Gap_{real}}$$
 = 1.1365. This mean that even though there was no "missing records", due to

the current official urban household survey cannot cover the migrant households with all members migrated into cities and the rural migrants workers who have not any economic ties with their rural families, the urban-rural income gap was overestimated by 13.65%. Then the actual urban-rural income gap in 2010 would be 2.84 times, and not the 3.23 times in statistics.

V. Conclusion

Through the analysis of survey data from the two survey areas in Zhejiang and Shaanxi, we found that the rural population that have moved all of their families to the urban areas are basically not included in the urban household survey, those migrants who no longer have close economic ties with their rural families are not included in the urban household survey after they are excluded from the rural household survey, and the income of those rural family members that have moved out to work has failed to be fully recorded or simply not been recorded. All the three factors made the urban-rural income gap be overestimated by 41.26%. If this result was able to represent the overall situation in China, the actual urban-rural income gap in 2010 was only 2.29 times, instead of 3.33 times in statistics. In addition, even though assuming that there was no "missing records, due to the existing urban residents survey not covering the migrants, the gap also could be overestimated by 13.65%.

Certainly, there are still a lot of limitations in this study: First, the sample size of the survey is as small as less than 1000 households, so the survey data from only two regions are hard to represent the overall situation in China. Second, while investigating the "missing record" problem, we assume that there is no income omission for those local urban families, but in fact, the number of income omission is also very large. Third, we assume that there is no cheat in incomes of urban residents, that is, all the incomes urban families recorded are factual, thus the accounting incomes are real. However, there are studies pointed out that the incomes of urban residents are severely concealed (eg, Wang Xiaolu, 2010). We will consider resolving these limitations in the following studies.

This study shows that large numbers of rural people are moving to cities, which indeed bring a great impact to the statistics of urban-rural income gap. To get accurate statistics, we must take full account and resolve it and try to cover the migrants in the urban households survey. In rural areas, we need pay attention to the accuracy of the income recording of those rural family members working in cities and overcome the serious omission of income recording.

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