International Financial Crisis and Wage Inequality in Urban China

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Abstract

Shock of the international financial crisis occurred in 2007/8 had a negative impact on the Chinese economy at the early stage, but the immediate reaction of the Chinese government with a stimulus package of 4 trillion investment made the economy recovered promptly. Since the crisis and the government stimulus package generated different impacts on unemployment and wage growth across regions and industries, the impact would lead to some changes in the pattern of wage inequality before and after the crisis. The paper uses the urban household data collected from RUMIC surveys during 2008-2010, to investigate the changes in wage growth and inequality in urban China during this period. The findings indicates that the international financial crisis did not have significantly negative impact on wage growth and contributed to narrowing wage inequality in urban China, which was largely due to offsetting effects of the governmental stimulus policies. However along with fading impact of the stimulus policies and growing impact of the international financial crisis, the wage growth experienced a downward trend and wage inequality appeared to rise in 2010.

1. Introduction

Since the late 1970s and early 1980s when the economic reforms were initiated, China has achieved fast economic growth and substantial rise of wage level. At the same time China has experienced increasingly rising income and wage inequality (Griffin and Zhao, 1993; Riskin et al, 2001; Gustafsson et al, 2008; Ravallion and Chen, 2007; Li et al, 2013). The income inequality in China as a whole in terms of Gini Coefficients，increased from 0.28 in 1983 to 0.48 in 2007 (Ravallion and Chen, 2007, Li et al, 2013). At the same time, urban income inequality displayed almost the same pattern in China, the Gini coefficient increased from 0.17 in 1983 to 0.36 in 2007. Wages as a part of household income have shown also a widening distribution in urban areas, becoming one of many sources of rising household income inequality (Gustafsson and Li, 2001; Khan and Riskin, 2005; Knight and Song, 2008).

The international financial crisis occurring in 2007/8 had a shock on the Chinese economy and labour market as well. In late 2008 and 2009, the shock generated a significantly negative impact on China’s export and economic growth. The export fell dramatically, from 18.4% in 2007 to 7.8% in 2008 and further to -16.1% in 2009 (China Statistical Yearbook 2013). As a result of sharp decrease in export, the GDP growth slowed down, from 14.2% in 2007 to 9.6% and 9.2% in 2008 and 2009. It was reported that there were more than 20 million of rural migrant workers becoming unemployed and returning back their hometown at the beginning of 2009 resulting from falling export and close-down of enterprises. Facing the slow-down of economic growth and rising unemployment, the Chinese government made an immediate response by introducing a series of stimulus policies in the early 2009. As a result, from the middle of 2009 the public investment increased considerably to offset the negative impact of export reduction on economic growth and employment. At the same time, the demand for unskilled labour augmented significantly since the stimulus funds was mainly placed on housing construction and infrastructure improvement.

Given that the international financial crisis and the governmental stimulus policies have different effects on labour market outcomes such as wage growth and wage inequality, our research questions are as follows. Did the international financial crisis have a negative impact on wage growth in China? To what extent did the stimulus policies offset the impact of the international financial crisis on wage growth? Did the international financial crisis lead to rising or reducing wage inequality? What was the impact of the stimulus policies on wage inequality? To answer these questions, the paper uses the data of RUMIC surveys conducted in 2008, 2009 and 2010 to examine changes in wage growth and inequality of urban workers and migrant workers during the period under study.

The findings from our analysis indicates that the international financial crisis did not have significantly negative impact on wage growth and contributed to narrowing wage inequality in urban China, which was largely due to offsetting effects of the governmental stimulus policies. However along with fading impact of the stimulus policies and growing impact of the international financial crisis, the wage growth experienced a downward trend and wage inequality appeared to rise in 2010.

This paper is structured as follows. In Section 2, we present a brief literature review. In Section 3, we describe as a background the Chinese macroeconomic reactions to the international financial crisis in 2007/8 and the governmental stimulus policies and labour market outcomes. Section 4 discusses the data used in this paper and provides some descriptive statistics of the data. The results from our analysis on changes in wage growth and inequality are presented and discussed in Section 5. In Section 6, we investigate the change in wage structure for both urban workers and migrant workers. We present decomposition results based on wage regression analysis in Section 7, and the paper is concluded with policy implications in Section 8.

1. Literatures on crisis and inequality

The recent global financial crisis has attracted lots of attentions to interaction between economic crises and income/wage inequality again. Some studies examined the distribution impact of the crises in the past, attempting to find out whether income inequality would change as a result of a crisis. In theory, the prediction is ambiguous since a crisis could reduce or increase inequality. From empirical perspective, the distributional effect of crises varies across countries and periods, and also depends on the nature and type of the crises: banking, currency or twin crises (Fiorio and Saget, 2010).

As summarized by Atkinson and Morelli (2011), there are three major systemic banking crises in the US: the 1929 Great Crash, the Savings and Loan crisis in 1980s, and 2007-8 sub-prime crises. Focusing on an inverted V shape pattern for inequality, Atkinson and Morelli (2010) looked for similar patterns around the world in the twentieth century when suffering banking crisis. They found evidence for inverted V during the 1929 Great Crash and the period of the Savings and Loan crisis, while between 2006 and 2008, the performance of inequality depended on particular definition of income. Fiorio and Saget (2010) also revealed that the recent banking crisis followed a period in which the share of income accruing to the richest grew dramatically in the United States, United Kingdom and Canada, but was not observed in continental Europe. They also found that during the crisis, earnings inequality has increased very slightly in the UK and US, especially in the US.

In Nordic countries, Atkinson and Morelli (2011) found that there was a clear rise in overall inequality in the years following the banking crisis of the 1990s in Norway and Finland with little apparent upward trend before the crisis period. Besides, the 2007 crisis in Iceland appeared to show an invert V shape, with income inequality rising rapidly during the years preceding the crisis while falling sharply in the year following the crisis.

For developing countries, Lopez-Acevedo and Salinas (2000) found that inequality decreased during and shortly after the peso crisis during 1994-96 in Mexico, reversing the trend of widening inequality since 1984. The crisis led to fall of the income share of the top 10% of the population, mainly through a reduction of their share of labor income. Moreover, inequality started to increase again in 1998 after the strong performance of the Mexican economy in 1997.

Ragayah (2005) reported mixed evidence about the inequality trends in the immediate aftermath of the 1997/98 East Asian financial crises when examining the income distribution in East and Southeast Asian developing economies. He argued that only Korea had a clearly adverse impact on income distribution during the 1997/98 East Asian financial crisis, and the income inequality in Hong Kong and Taiwan continued to widen despite the crisis, while the evidence for Singapore is mixed. Income inequality also became wider in Indonesia, Philippines, and Thailand after the crisis. However, in Malaysia, the crisis put a brake on the rising inequality in the 1990s with a decline of the overall economy.

Moreover, many economists have argued that rising inequality in the decades before the crisis led to an unsustainable financial bonanza and ultimately to the 2007-8 US financial crisis (Atkinson and Morelli, 2011). Stiglitz (2009) hypothesized that, in the face of stagnating real incomes, households in the lower part of the distribution borrowed to maintain the rising of living standards, and such unsustainable borrowing led to a credit boom. Rajan (2010) also argued that “growing income inequality in the United States stemming from unequal access to quality education led to political pressure for more housing credit. This pressure created a serious fault line that distorted lending in the financial sector. However, using data from a panel of 14 countries between 1880 and 2008, Bordo and Meissner (2012) provided strong evidence linking credit booms to banking crises, but no evidence that rising income inequality leaded to credit booms.

No doubt that the shock of banking crisis occurred in 2008 had a negative impact on the Chinese economy at the beginning, but the immediate reaction of the Chinese government with a 4-trillion-yuan stimulus package has made the economy recovered soon. Putting aside the relationship between inequality and financial crisis, we are not able to tease out the impact of this crisis on China’s labor market. Therefore, our aim here is to examine how wage growth and inequality changed before and after banking crises in urban China. The changes can be attributed to both the international financial crisis and the stimulus policies, although it is not possible to separate the effects of the former from those of the latter.

1. International financial crisis, stimulus policies, and labor market in China

The 2007/08 global financial crisis triggered by the sub-prime crisis in the U.S. in April 2007 has spread across the world. The world economy suddenly slowed down in 2008 and contracted by -0.6% in 2009 after the strong growth from 2003 to mid-2007 (ILO, 2013). Due to the joint efforts of all the countries, the recovery in 2010 was initially stronger than expected, with the world economic output rising by about 5%. While in 2011 and 2012, the growth rate dropped again to less than 4% (ILO, 2013).

It is not only the worst economic crisis since the Great Depression in the 1930s, but also the first real crisis China has ever experienced. However, in order to stimulate the domestic economy, the Chinese government announced a 4-trillion-yuan (585.7 billion U.S. dollars) stimulus package in November 2008. Specifically, the money was planned to finance programs in 10 major areas over the next two years, which can be essentially classified into two categories: infrastructure and people’s livelihoods. Moreover, a total of 1.18 trillion yuan, or 29.5% of the total package, was from the central government, and the remaining fund would be provided by the local governments and private sectors.

Meanwhile, China shifted from "prudent" to "proactive" fiscal policy in the fourth quarter of 2008 to counterbalance the adverse shock of the crisis by boosting the domestic demand. The proactive fiscal policy involved tax cuts of 550 billion yuan, including reforming value-added tax system, reducing real estate and securities transaction levies and the canceling administrative fees. Moreover, the monetary policy also turned from "tight" to "moderately loose" to support the investment plans. China’s central bank scrapped lending limits of commercial banks in early November of 2008 to offer more loans to the economy and also slashed the benchmark interest rates for five times as well as the deposit reserve requirement ratio (RRR) for four times in 2008.

As a result, China avoided an economic recession and succeeded in maintaining higher economic growth than the rest of the world. As shown in Figure 1, the economic growth rate decreased from 14.2% in 2007 to 9.6% in 2008, and further slightly down to 9.2% in 2009. It rebounded to 10.4% in 2010.

However, Figure 1 also reveals that during the financial crisis, the international trade, exports and imports, was significantly declining. The growth rate of the international trade fell from 18.4% in 2007 to 7.8% in 2008, and further to -16.3% in 2009. Though rebounding to 33.9% in 2010, it also showed a downward trend. As a country with a large size of surplus labour, China’s comparative advantage still lies in labor intensive manufacturing, which is a major sector of producing exported goods. Therefore the drastic reduction in the international demand generated a greater shock on the Chinese manufacturing than on other sectors.

Figure1 Economic growth rate and trade growth rate in China, 2005-2012

Source: 2013 China Statistical Yearbook

What’s the impact of the global financial crisis on labor market? Most dramatically, the unemployment rate in the world as a whole kept rising from 5.5% in 2007 to 6.2% in 2009, particularly in developed economies, where unemployment was less than 6% before the crisis while peaked at 8.8% in 2010 (ILO, 2013). While in China, according to the official data shown in Figure 2, both the numbers of urban employment and migrant have been expanding since 2008. At the same time, the urban registered unemployment only increased slightly from 4% in 2007 to 4.3% in 2009, and then decreased to 4.1% in 2010 as well as 2011.

What impact on wage growth and inequality? Evidence from advanced countries indicated that the crisis affected the wage growth. Globally, the growth of real monthly wages suffered much in 2008, with considerable decreasing to only 1.0% in 2008 from 3% in 2007, and then it went back up to 1.3% and 2.1% respectively in 2009 and 2010 (ILO, 2013). However, excluding China from the analysis would resulted in much lower rates of global wage growth of 2.3%, 0.3%, 0.3%, and 1.3% respectively in 2007, 2008, 2009, and 2010 (ILO, 2013). Because China’s official statistics on wage growth published in *China Statistics Yearbook* refer only to “urban units”, which in practice cover mostly State-owned enterprises, collective-owned units and large private and jointed-venture enterprises.

Figure 2 The change of employment in urban China, 2005-2012.

Source: 2013 China Statistical Yearbook

Figure 3 The change of wage growth and labor share in urban China, 2005-2012.

Source: 2013 China Statistical Yearbook

As shown in Figure 3, the growth of real wage in China from “urban units” fluctuated around 10% since 2008, and was always a little bit higher than the nominal wage except in 2009, when the sharp decline in inflation resulted in the higher real wage growth. However, the labor income share of GDP went down again since 2009.

As discussed above, the official figures provided by National Bureau of Statistics of China cannot fully reflect the change of labor market in China due to data limitations, typically on the changes in wage growth and inequality. In the next sections, we will address these issues by using the data from the Rural-Urban Migration surveys in China (RUMiC) conducted in 2008, 2009, and 2010.

1. Data

This paper mainly uses the data from RUMiC survey. The data cover three types of households – urban local households, rural-to-urban migrant households, and rural households. Detailed information was collected on incomes and expenditures, employment status, family structure, and social and economic characteristics at both personal and household level by the survey. Our analysis uses only the data of the first type of households, i.e., urban households.

The same nine provinces were selected in the 2008, 2009 and 2010 waves of the survey. They are Shanghai, Jiangsu, Zhejiang, and Guangdong from eastern China; Anhui, Henan, and Hubei from central China; Chongqing and Sichuan from western China. The urban sample was drawn from the large sample of the national household survey conducted annually by the NBS. The detailed information of the sampling procedures and methods can be found in RUMiCI Survey Documentation[[1]](#footnote-2).

Focusing on working-age people of 16-60 years old, we first estimate the labor force participation rate and unemployment rate for urban workers respectively. As reported in Table 1, the data indicate the labor force participation rate in urban sample declined by less than 1% (from 74.4% in 2008 to 73.5% in 2010). Although the urban unemployment rates in urban sample were higher than official urban registered figures, they almost kept stable around 9% during three years.

**Table 1 Labor force participation rate and unemployment rate in China, 2008-2010**

|  |  |
| --- | --- |
| 　 | Urban workers |
| 　 | 2008 | 2009 | 2010 |
| No. of working-age people | 10585 | 10439 | 10046 |
| Labor force participation rate (%)  | 74.40 | 74.27 | 73.51 |
| Unemployment rate (%) | 9.41 | 9.42 | 9.07 |

Source: The authors calculated the figures in the table using the RUMiC urban data, 2008-2010.

In analyzing the wage growth and inequality, we restrict our sample to those who were wage earners and with complete information on demographic and employment characteristics such as age, gender, education, occupation, industry, ownership, labor contract, monthly income, working hours per week, and so on. This yields a sample size of 6449, 6352, 5664 urban workers respectively in the 2008, 2009, and 2010 cross-sectional samples.

Table 2 presents the statistics of the distributions and individual characteristics of the urban and migrant samples. In the urban sample, the average age of the respondents was approximately 40 years old during 2008 to 2010. About 56% were male, and more than 80% were married. While migrant workers were almost 10 years younger than urban workers, the male accounted for 60%, and about 55% were married.

The distribution of workers with different education levels stayed stable during 2008 to 2010 in urban sample, with less than 20% of them having junior middle school education or below, more than a quarter being senior middle school graduates, about 10% having professional school education, almost a quarter with polytechnic college education, and about 20% having college education or above.

Regarding the occupation distribution in the urban sample, 5-7% of the observations were managers, close to a quarter were professional technicians, about a quarter were clerk and relating staffs, approximately 20% were commercial and service workers, 15% were manufacturing, transporting equipment manipulator and relating staffs. It should be noted that there were some changes in occupation distribution between 2008 and 2010. For instance, the proportion of urban workers employed as commercial and service employees increased by 6.3% while the proportion of urban worker as manufacturing and transportation employees decreased by 14.2% (See Table 2).

 In terms of employment industry, it is not surprising that the employment in manufacturing declined while the employment in construction increased considerably. These changes were the results in responding to declining exports and expanding investment in infrastructure. At the same time, the ownership structure of employment also changed with fast growth of employment in private enterprises increasing from 18.9% in 2008 to 22.4% in 2010. Moreover, with implementation of (New) Labor Contract Law in January, 2008, the percentage of urban workers with long-term labor contract increased from 45.6% in 2008 to 62% in 2010, while there were still more than 10% of urban workers having no contract.

**Table 2 Descriptive statistics of the sample distributions and individual characteristics**

|  |  |
| --- | --- |
| 　 |  Urban  |
| 　 | 2008 | 2009 | 2010 |
| Number of observations | 6449 | 6352 | 5664 |
| Age |  |  |  |
| Mean | 39.96 | 40.31 | 40.05 |
| Std. Dev. | 9.74 | 9.75 | 9.77 |
| Male (%) | 56.04 | 55.76 | 54.70 |
| Marriage status (%) |  |  |
| Coupled | 83.90 | 84.02 | 82.57 |
| Single | 16.10 | 15.98 | 17.43 |
| Education (%) |  |  |  |
| Elementary school and below | 2.29 | 2.14 | 2.47 |
| Junior middle school | 17.86 | 16.56 | 15.17 |
| Senior middle school | 25.54 | 25.13 | 26.87 |
| Specialized secondary school | 10.68 | 10.31 | 9.73 |
| Polytechnic college | 24.95 | 25.22 | 24.89 |
| Undergraduate | 16.17 | 18.32 | 18.80 |
| Postgraduate | 2.50 | 2.31 | 2.07 |
| Occupation (%) |  |  |  |
| Managers | 7.10 | 5.76 | 7.19 |
| Professional technicians | 24.08 | 24.07 | 23.80 |
| Clerk and relating employees | 25.23 | 26.16 | 23.34 |
| Commercial and service employees | 19.29 | 21.17 | 20.50 |
| Manufacturing and transporting equipment manipulator and relating employees | 15.88 | 15.44 | 13.63 |
| Others | 8.42 | 7.38 | 11.55 |
| Industry (%) |  |  |  |
| Manufacturing | 18.90 | 17.68 | 17.50 |
| Mining, Production, Construction | 8.57 | 8.60 | 10.12 |
| Transport, Storage, Post | 9.43 | 9.26 | 9.22 |
| Wholesale, Retail Trade, Hotel, Catering | 13.18 | 13.74 | 12.55 |
| Financial, Real Estate | 5.86 | 5.82 | 5.44 |
| Leasing, Services to Households | 14.30 | 14.03 | 16.84 |
| Scientific Research, Education ,Culture, Health, Social Organization | 28.50 | 29.85 | 26.66 |
| Agriculture, and others | 1.26 | 1.02 | 1.68 |
| Ownership (%) |  |  |  |
| Government and Institution | 39.40 | 35.22 | 33.53 |
| State-owned enterprises | 20.02 | 23.72 | 24.42 |
| Collective enterprises | 6.59 | 6.25 | 6.13 |
| Private enterprises  | 18.87 | 19.10 | 22.39 |
| Foreign firms | 4.71 | 4.63 | 4.36 |
| Self-employed | 6.99 | 6.42 | 5.26 |
| Others | 3.41 | 4.66 | 3.92 |
| Labor contract (%) |  |  |
| Permanent | 35.76 | 33.38 | 26.11 |
| Long-term | 45.56 | 50.39 | 62.01 |
| Short-term | 7.13 | 4.28 | 1.06 |
| None | 11.55 | 11.95 | 10.82 |
| Province (%) |  |  |  |
| Shanghai | 11.97 | 11.84 | 11.18 |
| Jiangsu | 11.1 | 10.77 | 10.5 |
| Zhejiang | 10.92 | 10.85 | 9.02 |
| Anhui | 10.76 | 11.08 | 11.86 |
| Henan | 11.61 | 11.6 | 10.28 |
| Hubei | 7.74 | 8.06 | 8.14 |
| Guangdong | 15.65 | 15.76 | 16.54 |
| Sichuan | 8.17 | 8.01 | 8.92 |
| Chongqing | 12.08 | 12.03 | 13.56 |

 Sources: the RUMiC urban data, 2008-2010.

1. The change in wage growth and inequality

The data show that there was fast wage growth from 2008 to 2009, but the wage growth slowed down in 2010. As indicated in Table 3, the average nominal monthly wage increased from 2224 yuan in 2008 to 2626 yuan in 2009, with a growth rate of 18%, then further to 2783 yuan in 2010, growing by 6%. The real wage grew by 19.5% in 2009 and then dropped to 2.6% in 2010.

Table 3 also shows changes in the wage inequality during this period. The Gini coefficient of urban monthly wage firstly rose from 0.375 to 0.39, and then declined to 0.355. The coefficient of variation, the Theil index and the ratio of 90th to 10th percentile all suggested the similar trends.

As in many countries the global economic crisis led to shorter working hours of workers in order to avoid lay-offs (ILO, 2013), the mean of urban workers’ working time slightly decreased in 2009 resulting from readjustment of sectoral employment, but the working time went up to the higher level in 2010.

**Table 3 The change in wage growth and inequality**

|  |  |
| --- | --- |
| 　 | Urban workers |
|  | Monthly wage (yuan) | Change (%) |
| 　 | 2008 | 2009 | 2010 | 08-09 | 09-10 |
| Nominal monthly wage income |  |  |  |
| Mean | 2224 | 2626 | 2783 | 18.09 | 5.98 |
| Median | 1787 | 2000 | 2200 | 11.92 | 10.00 |
| Coefficient of variation | 0.910 | 1.092 | 1.007 | 20.06 | -7.81 |
| Gini coefficient | 0.375 | 0.389 | 0.354 | 3.72 | -8.91 |
| Theil index  | 0.255 | 0.298 | 0.244 | 16.86 | -18.19 |
| P90/P10 | 5.00 | 5.56 | 5.00 | 11.12 | -9.99 |
| Real monthly wage income (at 2008 price) |  |  |
| Mean | 2224 | 2656 | 2725 | 19.45 | 2.60 |
| Median | 1787 | 2023 | 2160 | 13.18 | 6.78 |
| Coefficient of variation | 0.910 | 1.094 | 1.006 | 20.20 | -8.00 |
| Gini coefficient | 0.375 | 0.390 | 0.355 | 3.95 | -8.93 |
| Theil index  | 0.255 | 0.299 | 0.244 | 17.27 | -18.29 |
| P90/P10 | 5.00 | 5.54 | 4.97 | 10.79 | -10.27 |
| Working hours per week |  |  |  |  |
| Mean | 42.97 | 42.57 | 43.46 | -0.92 | 2.09 |
| Median | 40.00 | 40.00 | 40.00 | 0.00 | 0.00 |

Sources: the RUMiC urban data, 2008-2010.

Figure 4 displays variation of wage growth of workers in deciles in the years of 2009 and 2010. It is apparent that the high wage workers gained much more than the low wage workers in 2009, the first year of the implementation of the stimulus policies. As indicated in Figure 4, the workers in the highest decile had wage growth of over 25% while it was just less than 8% for the workers in the three lowest deciles in 2009. However, the wage growth pattern changed significantly for the urban workers in different deciles in 2010.

Figure 4 Growth rate of monthly real wage by decile groups.

Figure 5 presents the changes of the dispersion of real monthly wage for urban worker samples from 2008 to 2010. For urban workers, the P10/P50 ratio kept around at 45 in three years while the P90/P50 ratio increased significantly from 226 to 248, then down to 224, suggesting that the poor almost stayed steadily in their relative position in the overall wage distribution while the rich gained more from 2008 to 2009 but less from 2009 to 2010. Therefore, the change of urban wages inequality during this period was mainly caused by the changes of the relative position of the rich.

 Figure 5 The change of the dispersion of real monthly wage for urban and migrant workers from 2008 to 2010.

What’s more, the recent global trends in wages and in the wage share should be seen against a backdrop of widespread and rising wage inequality, also characterized by rapidly increasing wages at the top while stagnating wages at the median and bottom of the distribution (ILO, 2013).

1. The change in wage determination

To understand the factors behind wage changes in urban China during 2008 to 2010, we estimate the following wage functions for urban samples in three years

where the ln(wage) is the log level of real monthly wage expressed at 2008 prices, and X is a vector of observed individual characteristics. Specifically, we include explanatory variables such as four education dummies, age, age square, and five skill-based occupation dummies that might represent human capital. Gender (a dummy variable for male) and marriage status (a dummy variable for single) are also included. In addition, we introduce seven employment industry dummies, six ownership dummies, province dummies and three dummy variables for labor-contract status to reflect situation of labor market segmentation. Lastly, we cluster the standard errors at the household level to correct for heteroskedasticity.

Table 4 presents the estimatesof coefficients of explanatory variables for urban samples in all three years. It is clear that education level plays positive effects on wages. Except for the coefficient of senior middle school, compared with junior middle school education as an omitted variable, the coefficients of higher levels of education increased from 2008 to 2009, and then decreased a little in 2010. Age, a proxy for experience, also shows positive effects on wages. During this period, the age coefficient became larger in urban sample.

The coefficients on male, positive in all three years, decreased slightly. However, the narrowing gender gap in urban workers was still wider than migrant workers. As to occupation, skilled workers such as managers and professional technicians earned higher wages, while commercial and service workers were those most disadvantaged people. For urban workers, the coefficients of the occupation terms indicated some decrease in the wages premium on occupation-specific skills.

In terms of those labor market segmentation variables, it appears that wage gaps across various employment industries became more and more prominent from 2008 to 2010. For instance, comparing with manufacturing, the coefficient of mining, production and construction industry increased gradually from 0.11 in 2008 to 0.14 in 2010 in urban data. Additionally, urban workers engaged in financial and real estate were the highest-wage earners while those engaging in leasing and services to households were the lowest-wage ones. Regarding to the ownership, relative to the omitted category (private enterprises) in urban China, only workers in foreign or joined venture enterprises got significant higher pay, and those worked for individual business got lower pay. As expected, labor contract, as a guarantee of decent work, was highly positive related to wage level. Moreover, wage segmentation among provinces cannot be ignored even for urban workers. It is not surprising that wages in eastern China were much higher than those in central and western China.

**Table 4 Wage functions for urban workers**

|  |  |
| --- | --- |
|  |  |
| 　 | 2008 | 2009 | 2010 |
| **Education** (Junior middle school is omitted) |  |  |
| Elementary school and below |  |  |
|  |  |  |  |
| Senior middle school | 0.09\*\*\* | 0.12\*\*\* | 0.18\*\*\* |
|  | (0.02) | (0.02) | (0.02) |
| Specialized secondary school | 0.21\*\*\* | 0.26\*\*\* | 0.25\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| Polytechnic college | 0.33\*\*\* | 0.40\*\*\* | 0.37\*\*\* |
|  | (0.02) | (0.02) | (0.03) |
| Undergraduate and above | 0.50\*\*\* | 0.60\*\*\* | 0.58\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| **Age** | 0.02\*\*\* | 0.05\*\*\* | 0.05\*\*\* |
|  | (0.01) | (0.01) | (0.01) |
| **Age square** | -0.00\*\*\* | -0.00\*\*\* | -0.00\*\*\* |
|  | (0.00) | (0.00) | (0.00) |
| **Gender** | 0.22\*\*\* | 0.21\*\*\* | 0.21\*\*\* |
|  | (0.01) | (0.01) | (0.01) |
| **Single** (Coupled is omitted) | -0.12\*\*\* | -0.07\*\*\* | -0.10\*\*\* |
|  | (0.03) | (0.02) | (0.03) |
| Managers | 0.30\*\*\* | 0.24\*\*\* | 0.19\*\*\* |
|  | (0.04) | (0.03) | (0.03) |
| Professional technicians | 0.17\*\*\* | 0.15\*\*\* | 0.12\*\*\* |
|  | (0.02) | (0.02) | (0.02) |
| Clerk and relating personnel | 0.05\*\* | 0.06\*\*\* | 0.03 |
|  | (0.02) | (0.02) | (0.02) |
| Commercial and service personnel | 0.00 | -0.05\* | -0.03 |
|  | (0.03) | (0.03) | (0.03) |
| Others | 0.00 | -0.09\*\*\* | -0.03 |
|  | (0.03) | (0.03) | (0.03) |
| **Industry** (Manufacturing is omitted) |  |
| Mining, Production, Construction | 0.11\*\*\* | 0.13\*\*\* | 0.14\*\*\* |
|  | (0.03) | (0.03) | (0.02) |
| Transport, Storage, Post | 0.09\*\*\* | 0.09\*\*\* | 0.11\*\*\* |
|  | (0.03) | (0.02) | (0.02) |
| Wholesale, Retail Trade, Hotel, Catering | -0.01 | 0.03 | -0.04 |
| (0.03) | (0.03) | (0.03) |
| Financial, Real Estate | 0.21\*\*\* | 0.24\*\*\* | 0.27\*\*\* |
|  | (0.04) | (0.04) | (0.04) |
| Leasing, Services to Households | -0.11\*\*\* | -0.12\*\*\* | -0.16\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| Scientific Research, Education, Social Organization | 0.07\*\* | 0.06\*\* | 0.11\*\*\* |
| (0.03) | (0.02) | (0.02) |
| Agriculture, or others | 0.01 | 0.19\*\*\* | 0.13\*\* |
|  | (0.06) | (0.07) | (0.05) |
| **Ownership** (Private enterprises is omitted) |  |
| Government and Institution | -0.07\*\*\* | -0.03 | -0.01 |
|  | (0.02) | (0.02) | (0.02) |
| State-owned enterprises | -0.02 | -0.01 | 0.04\* |
|  | (0.03) | (0.02) | (0.02) |
| Collective enterprises | -0.08\*\*\* | -0.07\*\* | -0.04 |
|  | (0.03) | (0.03) | (0.03) |
| Foreign or joined venture enterprises | 0.21\*\*\* | 0.16\*\*\* | 0.16\*\*\* |
| (0.04) | (0.04) | (0.03) |
| Individual business | -0.06\*\* | -0.07\*\* | -0.08\*\* |
|  | (0.03) | (0.03) | (0.04) |
| Others | -0.20\*\*\* | -0.17\*\*\* | -0.12\*\*\* |
|  | (0.04) | (0.03) | (0.04) |
| **Labor contract** (No contract is omitted) |  |
| Permanent | 0.48\*\*\* | 0.44\*\*\* | 0.42\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| Long-term contract | 0.30\*\*\* | 0.26\*\*\* | 0.35\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| Short-term contract | 0.09\*\*\* | 0.07\* | 0.40\*\*\* |
|  | (0.03) | (0.04) | (0.08) |
| **Province** (Shanghai is omitted) |  |  |
| Jiangsu | -0.26\*\*\* | -0.26\*\*\* | -0.30\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| Zhejiang | -0.08\*\*\* | -0.07\*\* | -0.01 |
|  | (0.03) | (0.03) | (0.03) |
| Anhui | -0.43\*\*\* | -0.52\*\*\* | -0.51\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| Henan | -0.55\*\*\* | -0.56\*\*\* | -0.57\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| Hubei | -0.47\*\*\* | -0.41\*\*\* | -0.43\*\*\* |
|  | (0.04) | (0.03) | (0.03) |
| Guangdong | 0.14\*\*\* | 0.15\*\*\* | -0.02 |
|  | (0.03) | (0.03) | (0.03) |
| Chongqing | -0.41\*\*\* | -0.37\*\*\* | -0.30\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| Sichuan | -0.48\*\*\* | -0.43\*\*\* | -0.42\*\*\* |
|  | (0.03) | (0.03) | (0.03) |
| **Constant** | 6.59\*\*\* | 6.17\*\*\* | 6.25\*\*\* |
|  | (0.14) | (0.14) | (0.14) |
| **Observations** | 6,449 | 6,352 | 5,664 |
| **R-squared** | 0.43 | 0.49 | 0.45 |

Note: 1. For the education variables, as shown in table 2, elementary school and below was merged with junior middle school as an omitted category because of too few samples in urban data..

2. \*\*\**p* < 0.01, \*\**p* < 0.05, \**p* < 0.10.

3. Heteroskedasticity-corrected standard errors clustered at the household level are in parentheses.

1. Decomposing the change in wage inequality

One approach to capture the change in wage inequality is to examine the contribution of particular characteristics to the change in a summary measure of inequality. Fields (2003) proposed a regression-based decomposition method of inequality by income sources.

Base on equation (1), the total log level of real monthly equals y can be expressed as

where , .

As shown by Shorrocks (1982), the share of inequality contributed by income source k is given by

So the relative contribution of characteristic k to inequality of wage is

Table 5 presents relative contribution of each variable to wage inequality according to the regression-based decompositions based on equations reported in Table 4. Generally speaking, less than half of wage inequality can be explained by the independent variables available. The sum of contribution from all the explanatory variables was 57 %, 51%, and 55% in 2008, 2009, and 2010 respectively.

Specifically, the human capital variables are major identifiable dis-equalizing factor. Net contribution of education attainment variables increased from 10.2% in 2008 to 14% in 2009, and then decreased to 12.3% in 2010, mainly resulting from declining returns to undergraduate and above education. However, senior middle school education and professional school education had an equalizing effect. Age variables contributed only less than 1% of the total wage inequality. The contribution of occupation variables also showed a change of inverted V shape, rising from 4.3% to 5.5%, and then dropping to 3.1%. Given that women were less well-paid than men initially, the gender variable accounted for 3.3-3.4% of the total wage inequality during the period under investigation.

Noticeably, labor market segmentation was another prominent dis-equalizing force. Alongside the enlarging wage gaps among employment industries, the total contribution of industry variables kept rising from 2.9% to 5.9%. The ownership variables could explain only 1.4% of the wage inequality in 2008, and then it reached to 1.6% in 2010. However, the government and institution played a small but reducing equalization effect during three years. The labor contract was the second significant variable among segmentation variables. Its contribution continued to decline from 8.23% in 2008 to 6.4% in 2010, implying wage gaps among workers with different contract status narrowing over time. Consistent with impressively greater wage gaps across regions, the province variables accounted for the largest part of the wage inequality in segmentation variables. However, its contribution grew from 12.3% in 2008 to 13% in 2009 and then dropped to 11.2% in 2010.

**Table 5 Decomposition of real monthly wage inequality**

|  |  |
| --- | --- |
| 　 | Contribution to total wage inequality (%) |
| 　 | 2008 | 2009 | 2010 |
| **Human capital** |  |  |
| Education  | 10.21 | 14.08 | 12.25 |
| Elementary school and below |
| Senior middle school | -0.86 | -1.33 | -1.64 |
| Specialized secondary school | -0.25 | -0.51 | -0.36 |
| Polytechnic college | 2.64 | 3.43 | 2.69 |
| Undergraduate and above | 8.68 | 12.49 | 11.56 |
| Age | 0.22 | 0.44 | 0.52 |
| Age | -1.34 | -2.42 | -5.30 |
| Age square | 1.56 | 2.86 | 5.82 |
| Occupation  | 4.28 | 5.50 | 3.11 |
| Managers | 1.89 | 1.47 | 1.18 |
| Professional technicians | 2.28 | 2.43 | 1.55 |
| Clerk and relating personnel | 0.16 | 0.31 | -0.01 |
| Commercial and service personnel | -0.04 | 0.80 | 0.35 |
| Others | -0.01 | 0.49 | 0.04 |
| **Discrimination** |  |  |
| Gender | 3.27 | 3.40 | 3.38 |
| Marriage Status | 0.40 | 0.25 | 0.21 |
| **Labor market segmentation** |  |  |
| Industry | 2.93 | 3.13 | 5.87 |
| Mining, Production, Construction | 0.19 | 0.24 | 0.51 |
| Transport, Storage, Post | 0.04 | 0.07 | 0.17 |
| Wholesale, Retail Trade, Hotel, Catering | 0.04 | -0.24 | 0.39 |
| Financial, Real Estate | 0.65 | 0.86 | 1.25 |
| Leasing, Services to Households | 1.19 | 1.33 | 2.10 |
| Scientific Research, Education , Social Organization | 0.82 | 0.81 | 1.38 |
| Agriculture, or others | 0.00 | 0.06 | 0.07 |
| Ownership  | 1.38 | 1.46 | 1.62 |
| Government and Institution | -0.54 | -0.34 | -0.04 |
| State-owned enterprises | -0.03 | -0.02 | 0.18 |
| Collective enterprises | 0.12 | 0.10 | 0.04 |
| Foreign or joined venture enterprises | 0.87 | 0.49 | 0.50 |
| Individual business | 0.38 | 0.53 | 0.53 |
| Others | 0.58 | 0.70 | 0.41 |
| Labor contract | 8.23 | 7.94 | 6.35 |
| Permanent | 8.22 | 8.30 | 0.93 |
| Long-term contract | 0.45 | -0.14 | 5.47 |
| Short-term contract | -0.44 | -0.22 | -0.05 |
| Province | 12.30 | 12.98 | 11.22 |
| Jiangsu | -0.08 | -0.05 | -0.24 |
| Zhejiang | -0.35 | -0.30 | -0.03 |
| Anhui | 1.61 | 3.71 | 3.93 |
| Henan | 3.68 | 3.77 | 4.12 |
| Hubei | 2.01 | 1.31 | 1.46 |
| Guangdong | 1.77 | 1.97 | -0.21 |
| Chongqing | 1.48 | 1.18 | 0.77 |
| Sichuan | 2.18 | 1.39 | 1.42 |
| Residual | 56.80 | 50.84 | 55.43 |

Sources: The figures in this table are calculated using the results in Table 4.

1. Conclusions

The paper examines the impact of the international financial crisis occurred in 2008 on wage growth and inequality in urban China. The analysis uses the data from RUMIC surveys conducted in 2008, 2009 and 2010 when the crisis started to diffuse into the Chinese economy and affect labour market in urban China.

The findings from our analysis indicates that the international financial crisis did not have significantly negative impact on wage growth in urban China at the beginning of the international financial crisis, which was largely due to offsetting effects of the governmental stimulus policies. The data show fast wage growth and narrowing wage inequality in the first year of the crisis for both urban workers, although it is impossible to separate the effects of the crisis from those of the stimulus policies. However, along with fading impact of the stimulus policies and growing impact of the international financial crisis, the wage growth experienced a downward trend in 2010.

Our analysis also provides evidences that both the international financial crisis and the economic stimulus policies contributed to rising wage inequality in the year of 2009 and falling wage inequality in the next year. The rising wage inequality was largely due to faster growth of well-educated workers, reflected in rising returns to higher education, faster growth of workers employed in mining, transportation and construction sectors compared to those in manufacturing sector, and rising wage gap between male and female workers.

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1. See the website: http://rse.anu.edu.au/rumici/documentation.php. [↑](#footnote-ref-2)