

## Correlation Analysis on Urbanization Level and Labor Cost in China

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### Abstract

In recent years, China labor costs continue to rise, especially in urban area, in the form of wage and welfare. There are lots of impact factors that influencing the rising of labor cost in China, while in this paper, we will mainly focus on the urbanization process of China, and correlation between urbanization and labor cost are discussed in details according to the data from 1989 to 2009. We found that both of the urbanization level and labor cost level have rising trends, the changes of the two have a positive correlation, and with the continuous improvement of urbanization level, labor costs will increase and speed up with the acceleration of urbanizing process.

*Keywords:* Urbanization; labor cost; living cost; social insurance; human capital investment

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### 1.0 INTRODUCTION

The past five decades have witnessed unprecedented economic growth in China (Waldman, 2004; Lett & Banister, 2009). With the high speed of economic growth, urbanization, which follows very broadly the same time-sequence as the process of economic process (Balchin, Isaac and Chen, 2000), has been accelerated by the increase of urban population and the number of cities and towns (Li & Piachaud, 2006; Wang, 2009). Urbanization attracted and enabled more rural people or migrants to cities for employment and better lives, which provided abundant cheap labor forces to the labor market. China used to be called as “world’s workshop” because products “Made in China” can be found almost in every country, while a relatively low labor cost is its advantage. China’s prevailing wage has become an important element that accelerate the economic growth of China, especially in manufacturing sectors which are most located in coastal areas (Waldman, 2004; Ang, 2010). Rich labor resources and relatively low labor cost are the most competitive advantages of China. But in recent years, China labor costs continue to rise, especially in urban area, in the form of wage and welfare. There are lots of impact factors that influencing the rising of labor cost in China, while in this paper, we will mainly focus on the urbanization process of China, and correlation between urbanization and labor cost are discussed in details in the following sections.

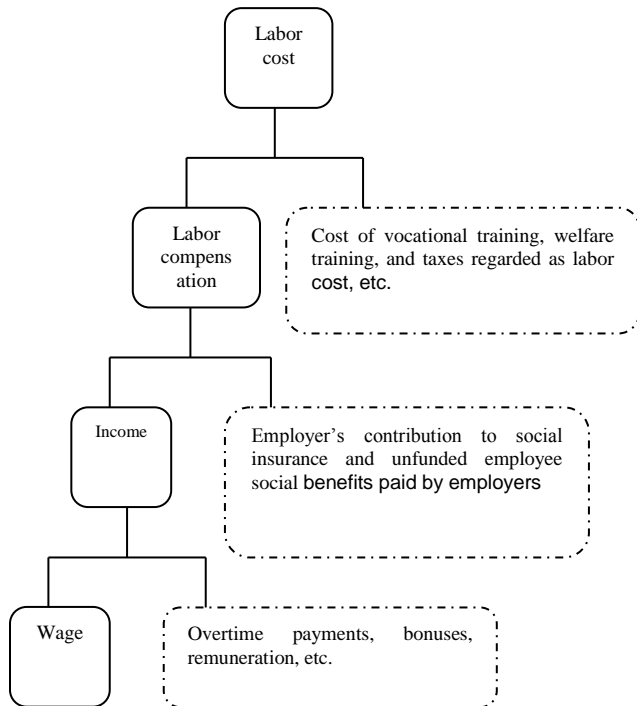
### 2.0 CALCULATION METHODS AND DATA DESCRIPTION

There are two vital variables in the correlation analysis: urbanization and labor cost. Urbanization level is usually

represented by urbanization rate, i.e. the proportion of urban population in the total population. We use the following calculate formula.

$$\text{Urbanization rate} = \text{Urban Population} / \text{Total Population} \times 100\%$$

While the measurement of labor cost is much more complicated, according to the terminologies of International Conference of Labor Statisticians (ICLS), we summarized the relationships among four items: wage, earning, compensation, and labor cost (refer to Figure 1).



**Figure 1** Relationship among the four items. *Source:* International Conference of Labor Statisticians

As cost of training, welfare training, and taxes regarded as labor cost account for a very small part of the labor cost in China (Zhang, 2009), and considering the acquirable of data, we use the data of Labor Compensation to stand for the value of Labor Cost.

To simplify,

$$\text{Labor Compensation} = \text{Income} + \text{Employer's social insurance contribution} \text{ (1)}$$

In china, there are five social insurance schemes for urban employees, including Urban Basic Pension Insurance (UBPI), Urban Basic Medical Insurance (UBMI), Unemployment Insurance (UI), Work Injury Insurance (WII), and Maternity Insurance (MI). Therefore, formula (1) can be rewritten as Labor Compensation = Income + Employer's contribution to (UBPI + UBMI + UI + WII + MI) (2)

According to the Chinese government's regulation on the social insurance contribution of employers: at least use 60% of local average income as the contribution base, UBPI shouldn't higher than 20% of the base, UBMI is around 6% of the base, UI is 2%, WII is 1% and MI is 1% as well. As there are 23 provinces and 11 provincial level administrative areas, and economic and social development of each place is quite different, so in this paper we use the average income of employed person in urban units to estimate the average labor compensation in nation level.

Then we have:

$$\text{UBPI} = \text{Number of contributors of UBPI} / \text{Total number of urban employees} \times \text{Urban average income} \times 60\% \times 20\% \text{ (3)}$$

$$\text{UBMI} = \text{Number of contributors of UBMI} / \text{Total number of urban employees} \times \text{Urban average income} \times 60\% \times 6\% \text{ (4)}$$

$$\text{UI} = \text{Number of contributors of UI} / \text{Total number of urban employees} \times \text{Urban average income} \times 60\% \times 2\% \text{ (5)}$$

$$\text{WII} = \text{Number of contributors of WII} / \text{Total number of urban employees} \times \text{Urban average income} \times 60\% \times 1\% \text{ (6)}$$

$$\text{MI} = \text{Number of contributors of MI} / \text{Total number of urban employees} \times \text{Urban average income} \times 60\% \times 1\% \text{ (7)}$$

Using the above calculating methods, and according to the data on China Statistical Yearbook 2010 and China Labor Statistical Yearbook 2010, we can estimate the value of labor compensation in China of certain years, refer to Table 1.

**Table 1** Urbanization Rate and Labor Compensation in Urban Areas, 1989-2009

	1989	1990	1991	1992	1993	1994	1995
UR (%) x	26.21	26.41	26.94	27.46	27.99	28.51	29.04
LC (CNY) y	2012.7	2218.4	2430.9	2988.2	3760.1	5091.4	6060.6
	1996	1997	1998	1999	2000	2001	2002
UR (%) x	30.48	31.91	33.35	34.78	36.22	37.66	39.09
LC (CNY) y	6773.3	7351.8	8446.8	9535.1	10935.2	13086.0	15131.3
	2003	2004	2005	2006	2007	2008	2009
UR (%) x	40.53	41.76	42.99	43.90	44.94	45.68	46.59
LC (CNY) y	17241.8	19930.6	23056.6	26904.8	32510.1	38709.1	43754.3

Note: UR stands for Urbanization Rate, LC stands for Labor Compensation  
 Resources: China Statistical Yearbook 2010 & China Labor Statistical Yearbook 2010

### 3.0 RESULTS AND DISCUSSION

Utilizing SPSS, the scatter diagram of Urbanization rate and Labor compensation can be drawn as Figure 2, and there is an obvious positive correlation.

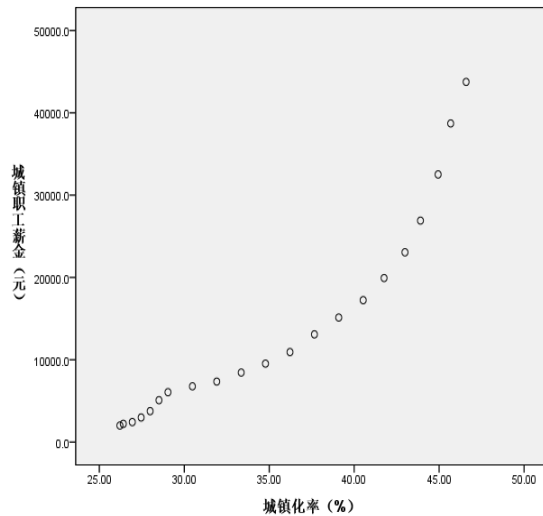


Figure 2 Scatter diagram

Pearson correlation coefficients were used to evaluate the potential relationship between labor compensation and urbanization rate of China. The Pearson correlation coefficients for the relation between urbanization and labor compensation is 0.935, and concomitant probability is less or equal to 0.01 at the 0.01 significant level, so there is a significant positive correlation between urbanization rate and labor compensation in China.

According to the scatter diagram and the Pearson correlation coefficients analysis, we use curve  $y=ae^{bx}$  for the curve estimation, and we got the regression equation:  $\ln y=4.5424+0.131x$  (natural logarithm in variable  $y$ , equal to 4.5424 plus 0.131  $X$ ), and  $R = 0.981$ , which means they are fitting very well. Therefore, since 1989, the China urbanization rate ( $x\%$ ) and labor compensation ( $y$  CNY) fit for the data model of  $y=ce^{dx}(c>0,d>0)$ , i.e. with the improvement of urbanization rate, labor compensations of urban employees are increasing correspondingly, and there is a first-slow-then-quick up trend. Then, we may draw a conclusion that: in China, since the implementation of reform and open policy in the 1980s, both of the urbanization level and labor cost level have rising trends, the changes of the two have a certain correlation and it is a positive correlation. With the continuous improvement of urbanization level, labor costs will increase and speed up with the acceleration of urbanizing process.

### 4.0 CONCLUSION

The current increase of labor cost in China is inevitable, while the research on the correlation of labor cost and urbanization is aiming at explaining the influence of urbanization on labor cost. The results of our research suggest that urbanization level has a significant effect on labor cost variation for the period of 1989 to 2009. The possible explanation for this result can be many. First, urbanization process has greatly improved the living standard in China, especially in urban area, but the costs of living also rose a lot, the CPI of urban residents in 2005 was 101.6 (previous year is 100), and the next three years it was 101.5, 104.5, 105.6 respectively, although it decreased to 99.1 in 2009 because of the economic crisis, the CPI rose again to 103.3 in 2010 (China Statistical Yearbook, 2011). Second, with the maturity of China social security system, more schemes were designed to protect the employees' rights, and more and more employees choose to participate social insurance which means the employers have to pay more contribution. Third, kinds of vocational trainings are another incentive of labor cost increasing (Zhang, 2009). Enterprises and employers have paid more attention on human capital investment, and employees have opportunities to attend trainings, advanced studies and other kind of job training. The investment on human capital has improved employees' working ability and increased economic benefits for the enterprises, and also added the labor cost of the enterprises. Fourth, China is in its transitional period from planned economy to market economy, lots of economic and social policies need to be reformed, such as city development strategy, wage policy, social security system, the variation of these policies and regulations will definitely have positive or negative influence on labor costs, on the current situation, policies of urbanization, minimum wage, and agriculture development have promoted the increase of labor costs.

As a conclusion, the Chinese government should make rational urbanization policy, adjustment and control the scale and speed of urbanization to reduce the negative influence of blind migration led labor cost increasing. Meanwhile, appropriately meet labors' needs of income and welfare, promote the beneficial interactions of labor cost increasing, economic growth, and social stability, and realize the sustainable development of economy and society in China.

### References

- [1] Waldman, C. 2004. The Labor Market in Post-Reform China: History, Evidence, and Implications. *Business Economics*. 39(4): 50–62.
- [2] Lett, E. and Banister, J. 2009. China's Manufacturing Employment and Compensation Costs: 2002–06. *Monthly Labor Review*. April 2009: 30–38.
- [3] Balchin, P. N., Isaac, D. and Chen, Jean. 2000. *Urban Economics: A Global Perspective*. New York: PALGRAVE.
- [4] Li, B. and Piachaud, D. 2006. Urbanization and Social Policy in China. *Asia-Pacific Development Journal*. 13(1): 1–24.
- [5] Wang, K., Zhou, Z., Sun, Z. and Zhu, H. 2009. *The Urbanization Process of China's Characteristics*. Shanghai: Fudan University Press.
- [6] Ang, Y. Y. 2010. China's Labor Cost Problem. *The International Economy Summer*. 40–41.
- [7] China Statistical Yearbook. 2011.
- [8] Zhang, B. 2009. *Trend and Consequence of Labor Cost Changing in China*. Beijing: China Jihua Press.