"Experiences and Challenges in Measuring National Income and Wealth in Transition Economies,"

International conference organized by the International Association for Research in Income and Wealth (IARIW) and the National Bureau of Statistics (NBS) of China.

Friendship Hotel in Beijing, China September 18-21, 2007,

Concurrent Session 2B: *The Non-observed Economy in Transition Economies*

Paper 1.

Observed Unemployment or Unobserved Employment?

Evidence from Shanghai Household Survey Data

Ming Lu and Shichao Tian*

Abstract: Unobserved employment refers to registered unemployed people holding actual jobs and it is especially prevalent in the transition economies. It is of great significance to know the scale and characteristics of such unobserved employment, which helps to accurately calculate the unemployment rate and identify the real unemployed people so that public resources can be efficiently allocated. Using Shanghai household survey data in 2005, our paper made the following conclusions about unobserved employment: (1) Unobserved employment rate is very high, and at least over 40% of registered unemployed or laid-off people actually hold jobs which bring them certain income. (2) Compared with the employed group, individuals who are middle-aged, lowly educated, married, divorced or bereft of his/her spouse are more likely to be engaged in unobserved employment, while individuals who are young, highly educated, unmarried or CPC members are inclined not to conceal their employment status. Gender and heath conditions do not exert a significant impact on whether the individuals conceal their employment status or not. (3) If we don't consider unobserved employed people as really unemployed, then the real unemployment-stricken groups are mostly women and people with a bad health. (4) Viewing from employment status, unobserved employment is more concentrated in the industries with low technology, such as social service industry, working in the private enterprises, taking business service as their profession, and more likely to be self-employed. (5) Compared with observed

* Ming Lu: School of Economics, Employment and Social Security Research Center, China Center for Economic Studies, Fudan University, Shanghai 200433, China; Email: minglu73@263.com. Shichao Tian: School of Economics, Employment and Social Security Research Center, Fudan University, Shanghai 200433, China; Email: tscstone@yahoo.com.cn. The authors would like to thank "985 Innovative Base" at School of Economics, Fudan University, for providing data support and National Social Sciences Fund Project (07BJL051) for financial support.

employment, unobserved employment has many irregularities, such as no formal labor contract and social insurances.

Key Words: unobserved employment, unemployment, labor market, transition economy, Shanghai

JEL Classification: E24, J21, R23

I. Introduction

Accurate estimation of unemployment rate and identification of the unemployed people is the foundation of macroeconomic policies and labor market policies. From the macro aspect, to know the unemployment rate helps to make an accurate judgment on the extent of labor resource utilization, which is also the basic information for the government to adopt contractionary or expansionary macroeconomic policy. From the micro aspect, to identify real unemployed people from those who declare themselves as unemployed helps to target government policy at the group who needs urgent help, and hence enhances the allocative efficiency of public resources. Regrettably, under the transitional employment system and labor statistics system, governments of transition economies can hardly calculate the accurate unemployment rate and distinguish who is really unemployed. One of the great challenges is how to distinguish those who work and earn to a certain degree from those who declare themselves as unemployed. Under the present unemployment registration system of Chinese cities, a group of registered unemployed people get their dole, minimum living guarantee, as well as enjoying medical insurance and other social benefits from the unemployment insurance system. However, their actual jobs might be just unobserved. How much will unobserved employment affect the calculation of unemployment rate? What are the characteristics of the unobserved employment people? These are the two core questions the paper tries to answer using the household survey data from Shanghai, China.

This paper is structured as follows: The second part makes a brief summary of previous researches and relevant findings, and establishes an overall knowledge of the unobserved employment in China. The third section elaborates on the data used in the paper. Section four estimates the scale of unobserved employment, and makes further estimation on the influence of unobserved employment on the calculation of unemployment rate. The fifth part conducts a statistical analysis on the individual and job characteristics of unobserved employment group. The last section concludes.

II. Unobserved Employment: What Do We Know

Although there are tons of papers on employment and unemployment problems in China, unobserved employment is rarely studied. Nevertheless, there are still some qualitative analysis literatures on this topic, for example, Yuan and Lu (1998), Gao (1998) and Ren (2001). In line with Yuan and Lu (1998), In this paper, unobserved employment refers to the phenomenon of registered unemployed people holding actual jobs and relevant incomes.

From the perspective of this definition, unobserved employment needs to be treated as unemployed people. In China, unemployed people identified by the government have to be registered so as to get unemployment benefits. The unemployed here should include temporarily laid-off workers from enterprises, who are not registered in unemployment agencies. Although laid-off workers haven't ended their relationship completely with their enterprises, they actually have no jobs. And if they are able, ready or active to find a job, they are actually nothing different from unemployed people. As we know, unemployment registration department of the government has to provide unemployment benefits for the registered unemployed people. For the laid-off workers, their affiliated enterprises have to provide certain wage and reemployment service for them.

Secondly, unobserved employment people are taking up an actual occupation and can earn some

income therefrom. From the perspective of economics, if the unemployed people are conducting some legal business activities and can obtain some incomes to certain standards therefrom, they should be considered as employed. On the basis of this viewpoint, our empirical analysis will not strictly distinguish the specific employment forms, whether formal or informal, sufficient or insufficient employment.

It is worthy to mention that unobserved employment is different from underground economy. Unobserved employment is a significant phenomenon in transition economies and only includes the unemployed or laid-off people conducting legitimate business activities, while underground economy is an economic phenomenon that can hardly be disposed of by modern market economies. Those engaged in the underground economy may well be unemployed people, employed people or people out of the labor force. Specifically, underground economic activities refer to the business activities of product and labor supply which are not calculated into the national GDP. Those engaged in these activities may proceed from the motive of tax evasion, law evasion or enjoying government unemployment benefits, for example, taking up a second occupation or selling home-produced products in the market. Underground economy also includes some illegal economic activities, such as illegal gambling, drug trafficking, smuggling and so on. All these illegal activities are not calculated into GDP in principle, even if these activities can be calculated by statistics.[1] In other words, according to the aforementioned two core points of unobserved employment, only the unemployed people engaged in legal underground economy belong to the concept of unobserved employment. On the other hand, unobserved employment people are not only engaged in underground economic activities. If formal units employ them, their products or service can be calculated into GDP. But provided that their relationships with their employers are not claimed as employment, they are still qualified for unemployment benefits.

How can unobserved employment come up? The direct cause lies in the information asymmetry in the unemployment statistics system, which leads to the moral hazard problem. Unobserved employment people will certainly be inclined to conceal their employment fact for getting extra income. The indirect cause can be attributed to the fact that national social security system is not sound, statistics supervision system is not in place, and labor legislation and execution is not perfect (Yuan and Lu, 1998). Unobserved employment, to a great extent, is a special phenomenon that comes up in the economic transition period. Unobserved employment can result in the inefficiency of public resources, impairment of social justice, detriment to the accurate judgment of employment situation, and therefore affect the effectiveness of public policies. Moreover, there exist many risks in the unobserved employment occupations, which is disadvantageous to the protection of their labor rights and interests. As a result, it is necessary to adopt corresponding countermeasures, for example, improvement of employment registration system and social security system, to make unobserved employment observed.

For the unobserved employment problem in China, estimation on the scale of unobserved employment and analysis on the people engaged in unobserved employment are lagging far behind qualitative analysis. However, due to the lack of relevant data, there exists no official estimation on the scale of unobserved employment in China, and all the available estimations come from specific survey samples in different places. Table 1 summarizes the existing estimations. We can learn from the table that, due to difference in time, place and sample, estimations on unobserved employment vary greatly but they are almost all above 40%. Estimation on the unobserved employment in ten large and medium-sized cities in China reported by Mo (2003) even amounts to as high as 80%. Of

[1] For the concept of underground economy, please see Dornbusch and Fischer, 1994.

course, such a high estimation has something to do with his definition of unobserved employment. He investigates those unemployed and laid-off people who have taken up jobs with income at least one time, rather than those people who are taking up jobs with a certain level of income.

Table 1: Summary of the estimation on the scale of unobserved employment

Year	Scale (%)	Place	Author	Sample frame
1997	40.00	Nanjing	Song Xiaowu (2001)	Unemployed people
1998	50-65	Shanghai	Research Team on Unobserved Employment (1998)	Unemployed and laid-off people
1998	24.88	Shanghai	Shanghai City Survey Team (1999)	Laid-off people
1998	46.80	Wuhan and Shenyang	Yu Faming (2001)	Unemployed and laid-off people
2001	45.10	Hangzhou	Zhang Shifei (2003)	Registered unemployed people
2001	80.00	Ten large and medium-sized cities	Mo Rong (2003)	Unemployed and laid-off people
2006	46.85	Yangjing District, Shanghai	Research Team on Unemployment in Yangjing District (2006)	Registered unemployed people

Researches in the above table differ a little bit from each other in the definition of unobserved employment and they all conform to the two core points we have put forward, i.e., registered as visible unemployment or laid-off, and holding actual jobs with certain income. However, due to the coverage differences of samples, we should be careful to compare and utilize the above estimations on the scale of unobserved employment. There exists no agreed definition on the unobserved employment rate. It can be seen from Table 1 that selected samples may generally be classified into "registered unemployed people", "unemployed and laid-off people", "unemployed people", and "laid-off people". Although different definition and sample coverage lead to incomparability of the above estimation results, at least we know that unobserved employment has been in China for a long time and has become a social economic phenomenon that can't be neglected. Moreover, the existence of unobserved employment, to a certain degree, leads to overestimation of urban unemployment in China.

III. Data Description

It has been pointed out that data relating to unobserved employment are not easily available and this is just one of the important reasons why there is so little empirical research on the unobserved employment. Our study will be based on the Shanghai household survey data in 2005. Viewing from its history of past 10-plus years, Shanghai has always been a leader in the reform of employment system and construction of labor market. Therefore, on the condition that nationwide data is not available to us, using Shanghai data to study unobserved employment can, to some extent, reflect the whole situation.

The data used in this paper come from the labor market and income survey jointly conducted by Employment and Social Security Research Center, Fudan University and Shanghai Labor and Social Security Bureau in 2005. The database involved 1453 households and 4494 individuals, including abundant information such as household and individual socio-economic characteristics, individual employment situation, and specially designed questions which could reflect unobserved employment, which well satisfies the needs of the study. Compared with data in Shanghai Statistical Yearbook

2005, survey samples used in this paper are well proportional to the proportion of households and individuals of the surveyed districts. (See Table 2.)

Table 2: Sample distribution of the Shanghai Labor Market and Income Survey data

District	Shanghai Survey Data in 2005				Data in Shanghai Statistical Yearbook 2005 (10,000)			
	Household	Proportion (%)	Individual	Proportion (%)	Household	Proportion (%)	Individual	Proportion (%)
Baoshan	277	19.06	858	19.09	32.70	19.27	86.76	18.88
Yangpu	343	23.61	995	22.14	38.05	22.42	108.35	23.58
Pudong	554	38.13	1733	38.56	66.73	39.32	180.90	39.37
Luwan	109	7.50	335	7.45	11.45	6.75	32.40	7.05
Fengxian	170	11.70	573	12.75	20.76	12.23	51.08	11.12
Total	1453	100	4494	100	169.69	100	459.49	100

IV. Scale of Unobserved Employment

In our estimation on the scale of unobserved employment, we focus on local residents in Shanghai who have Shanghai *Hukou* and reached legal working age. These include people who have lived at home for over 6 months in one year and reached legal working age (male 16-60, female 16-55), except those out of labor force, for example, students, housekeepers, army men, retirees and those who have lost laboring ability. After following these steps, we finally obtained valid samples of 1698 people.

Among all the 1698 working-age population, visible unemployed people, including laid-off workers from enterprises, account for 14.90%. However, among the above observed unemployed people, 40.71% are holding jobs which exceed over 5 hours a week and can bring them certain income. It can be said that, after years of reforming the labor market system, unobserved employment scale still maintains on a very high level. Widespread existence of unobserved employed people made the statistics overestimate the real unemployment rate. If we eliminate unobserved employment from observed unemployment, unemployment rate shall reduce from 14.90% to 8.83%[1] with a 6 percentage point decrease. If we include those unemployed of laid-off people who have taken up odd jobs and got wage to some standards every month, the scale of unobserved employment may become even larger and its influence on the overestimation of unemployment rate may become more significant.

People usually distinguish employment and unemployment with two standards: working hours and income from work. In China, Ministry of Labor and Social Security promulgated in May 2005 a new standard on employment that people whose wage reaches and exceeds local minimum wage standard are considered as sufficient employment and those whose wage doesn't reach local minimum wage but exceeds urban resident's minimum living guarantee are considered as insufficient employment. Starting from this provision, we can estimate the scale of unobserved employment according to working wage standards.

According to Table 3, monthly wage of all unobserved employed people varies from 200 Yuan to

[1] Due to the restriction of data, we cannot judge whether these observed unemployed people are actively looking for jobs. Meanwhile, our survey can hardly cover high-income communities. Therefore, calculated unemployment rate here has the possibility of being overestimated.

1000 Yuan and average at 1208 Yuan. Specifically, those whose monthly wage exceeds urban residents' minimum living guarantee (300 Yuan) accounted for 96.12% of all the unobserved employed people, while those whose monthly wage exceeds minimum monthly wage (690 Yuan) accounted for 78.64%[1]. Using urban resident's minimum living guarantee as the standard for employment, calculated scale of unobserved employment is 39.13%. Using minimum monthly wage as the standard, calculated scale of unobserved employment is 32.02%. Both of them are below the aforementioned 40.71%, and unobserved employment with minimum monthly wage as the standard is about 8% below. That is to say, if we take certain wage (for example, minimum monthly wage) as the standard to judge whether observed unemployed people are being employed, unobserved employment scale will decrease to some degree but is still large. Moreover, for fear of losing the status of unemployed person, unobserved employed people have the motive to conceal their real income. In consideration of this point, unobserved employment scale estimated with the working wage standard should be larger than our estimation[2].

Table 3: Distribution of monthly income by unobserved employment people

Standards	Value
Minimum	200 Yuan
Average	1208 Yuan
Maximum	10000 Yuan
Percentage of unobserved employment people whose monthly income exceeds the following standards	
2005 Shanghai Urban Residents Minimum Living Guarantee (300 Yuan)	96.12%
2005 Shanghai Minimum Monthly Wage (690 Yuan)	78.64%
Average monthly wage of all unobserved employed people (1208Yuan)	26.21%
2005 Shanghai Average Monthly Wage (2235Yuan)	6.80%

Note: Income of unobserved employed people refers to what was obtained from jobs, not including unemployment benefits and minimum living guarantee.

V. Characteristics of Unobserved Employment

Which groups of registered unemployed people are inclined to conceal their employment status? In other words, whether unobserved employment people have any general population and occupation characteristics? After our estimation on the scale of unobserved employment, it is of great significance for us to answer these two questions so as to deepen our knowledge about unobserved employment and ascertain real unemployed people. In this part, we will analyze in a detailed way the individual characteristics (for example, gender, age, education degree, political status) and occupational characteristics (for example, industry of their occupational positions and unit type) of unobserved employment people.

[1] In 2006, minimum monthly salary and urban residents' living guarantee in Shanghai have been enhanced to 750 Yuan and 320 Yuan respectively.

[2] Using regression method, we also estimate a semi-log individual income equation, and the residual tells that 71% of unobserved employment people have reported a lower value than the predicted income.

1. Population characteristics

We will divide all the samples into three categories, i.e. unobserved employment people, real unemployed people and observed employment people. By comparing these three groups of people, we can, to some extent, reach a general impression on the individual characteristics of unobserved employment people. The comparison result is presented in Table 4. In the table, the number of samples for unobserved employment, real unemployment and observed employment are respectively 103, 264 and 1331, and individual characteristics include 6 variables like gender, age, education degree, political status, health condition and marital status. For every characteristic, through introducing 0-1 variables, we calculated the average values of corresponding samples and made a statistical test on the differences of average values of the three groups.

First, let's look at the gender. Of all the unobserved employment people, men accounts for nearly 2/3 (66%), which is 13% higher than the corresponding proportion of real unemployed people and the difference is significant at the 5% level. This finding indicates that men are more active in reemployment after losing jobs or it is easier for men to be reemployed. On the one hand, this has something to do with the traditional idea that men should be bread earner of his family, so that men are more motivated to find new job opportunities. On the other hand, this also reflects the disadvantageous status of women in participating labor market and they would face more difficulties in reemployment. Although male proportion in observed employment people is lower than that of unobserved employment group, this difference is insignificant. In other words, gender characteristic doesn't exert a significant impact on whether the individuals choose unobserved or observed employment.

Table 4: Differences of average values for individual characteristics

Individual characteristics		Unobserved employment (A)	Real unemployment (B)	Observed employment (C)	A-B	A-C
Gender	0-female 1-male	0.66	0.53	0.61	0.13**	0.05
Age	16-30	0.14	0.19	0.27	-0.05*	-0.13***
	31-40	0.19	0.11	0.19	0.08**	0
	41-50	0.50	0.52	0.34	-0.02	0.16***
	50 or more	0.17	0.18	0.20	-0.01	-0.03
Education	Primary school and illiterate	0.04	0.05	0.04	0.01	0
	Junior high school	0.46	0.39	0.27	0.07*	0.19***
	Senior high school	0.28	0.37	0.28	-0.09*	0
	Skill training school	0.15	0.13	0.14	0.02	0.01
	College or higher	0.08	0.06	0.28	0.02	-0.20***
Political status	0-non-party member 1-CPC member	0.06	0.03	0.17	0.03*	-0.11***
Health condition	Very good	0.73	0.60	0.75	0.13**	-0.02
	Satisfying	0.24	0.31	0.22	-0.07*	0.02
	Very bad	0.03	0.09	0.03	-0.06**	0
Marital status	Unmarried	0.14	0.19	0.22	-0.05*	-0.08**
	Married	0.82	0.73	0.76	0.09**	0.06*

Divorced or losing spouse	0.05	0.08	0.02	-0.03*	0.03**

Note: a. *, ** and *** means significant on the 10%, 5% and 1% level respectively.

b. Non-party member includes league member, Democratic Parties' member and ordinary people

For the age structure of unobserved employment people, middle-aged group from 41 to 50 account for almost the half while young people aged from 16 to 30 accounts for the least 14%. Compared with real unemployment people, people aged from 31 to 40 who have certain working experience are more likely to find jobs, while young people aged from 16 to 30 are more difficult in reemployment. Compared with observed employment people, the proportion for young people aged from 16 to 30 to choose unobserved employment is 13% lower, while that for middle-aged people aged from 41-50 is 16% higher. That is to say, compared with young people, middle-aged people are more inclined to conceal their employment fact after finding a job. Young people care more about the status of observed employment than getting slender unemployment benefits and service, and they don't like to be treated as unemployed people. Once they find jobs, they would like to quit the status of registered unemployment. For middle-aged people, the situation is just the opposite.

For the education degree, those who received junior high school education account for almost a half, while those who received only elementary or no education, or skill training or higher education account for 4% and 8% respectively. By comparison, except the slight differences for skill training and higher education, there are no distinct differences in the education structure for unobserved employment people and real unemployed group. However, compared with observed employment group, the differences are significant. The proportion of those who received junior high school education in all unobserved employment people is 19% higher than that in the observed employment group, while the proportion of those who received higher education to undertake unobserved employment is 20% lower. After finding new jobs, individuals who have higher education would generally not conceal their employment status, while those with a lower education degree are just the opposite.

The status of Communist Party of China (CPC) member is generally considered as an important factor in generate individual income, social status and living condition. Of all the unobserved employment people in the data used in this paper, only 6% are CPC members, which is 3% higher than the proportion of party members in real unemployed people and 11% lower than that in observed employment group. The result indicates that the status of party member is indeed advantageous to find a new job, and compared with the employed people, party members are not generally inclined to conceal their employment.

Health status is also an element that can't be neglected. The statistical results presented in Table 4 indicates that there are no significant differences for unobserved and observed employment people on various health levels, such as good, satisfying and bad. That is to say, health status is not a factor which exerts a significant impact on whether individuals conceal or report their employment status. However, a good health condition is apparently beneficial for finding new jobs after losing the old ones: the proportion of people with good health in the unobserved employment group is 13% higher than that in real unemployment people, while the proportion of people with bad health condition in the unobserved employment group is 6% lower than that in the real unemployment people. And they both are significant at least at the 5% level.

Let's take a final look at the marriage variable. We can see that married people are more active to participate in reemployment and their proportion in unobserved employment group is notably 9% higher than their proportion in real unemployment group. Married people are more inclined to

conceal their actual employment, and their proportion in unobserved employment group is 6% higher than that in observed employment group. Unmarried people choose just the opposite. They are not active in reemployment and not willing to be engaged in unobserved employment jobs. Marriage characteristic for those who have divorced or lost their spouse is very special and their proportion in unobserved group is 3% lower than their proportion in real unemployment group. However, their tendency to choose unobserved employment after finding jobs is quite apparent.

Based on the above analysis, a summary of individual characteristics of unobserved employment people can help us to reach the following preliminary conclusions: (1) Reemployment ratio for men is higher and male gender doesn't exert a notable impact on whether they conceal their unobserved employment or not. (2) Compared with young people, middle-aged people are more likely to choose unobserved employment. (3) Individuals who received relatively high education such as skill training or higher education are inclined not to conceal their real employment, while those who received relatively low education such as junior high school education are just the opposite. (4) The status of CPC membership is beneficial for finding new jobs and they are not inclined to conceal their employment. (5) A good health condition is beneficial for finding new jobs after losing the old ones, but health condition is not a decisive factor on whether individuals conceal or report their employment status. (6) Married people are more active in reemployment and more inclined to take up unobserved employment jobs, while single people are just the opposite. People who have divorced or lost their spouse are also inclined to choose unobserved employment.

Table 5: MLogit Regression Result

Unobserved employment				Observed employment			
Variable	Coefficient	S.E.	Relative Risk Ratio	Variable	Coefficient	S.E.	Relative Risk Ratio
Male	0.668***	0.254	1.951	Male	0.411***	0.148	1.509
Age	0.204*	0.109	1.226	Age	0.003	0.060	1.003
Age Square	-0.003**	0.001	0.997	Age Square	0.000	0.001	1.000
Education	-0.005	0.048	0.995	Education	0.097***	0.030	1.102
CPC member	0.683	0.568	1.980	CPC member	1.812***	0.379	6.124
Good health	1.161**	0.566	3.192	Good health	1.069***	0.288	2.912
Satisfying health	0.703	0.594	2.020	Satisfying health	0.699**	0.301	2.011
Unmarried	0.197	0.655	1.218	Unmarried	0.890**	0.387	2.434
Married	0.667	0.521	1.948	Married	1.358***	0.313	3.888
Constant	-6.362***	2.433	1.951	Constant	-1.456	1.328	1.509
Log Likelihood	-1032.2273			LR chi2(16)	143.85		
Prob > chi2	0.0000			Pseudo R2	0.0651		

Note: real unemployment is comparison group.

The existence of unobserved employment phenomenon means that the group generally considered as unemployed includes those who are not really unemployed. Then, what characteristics should real unemployed people have? A simple comparison of average values for different groups of people still can't control for the influences of other factors. Therefore, let's define all the

aforementioned individual characteristics as explanatory variables and unobserved employment, real unemployment, and observed employment as independent variables and run a simple multinomial logistic regression. Table 5 presents the regression result, where the "relative risk ratio" value equals exponential (estimated coefficient).

Let's make a first comparison between observed employment people and real unemployed people. We can see that, compared with real unemployed people, observed employment ratio for men is 1.509 higher than that for women, a year more education can raise the employment ratio by 0.102, and the status of party member can help employment ratio increase 5.124 times of that of non-party members. Moreover, a decent health condition (good and satisfying health conditions which are opposite to bad condition), unmarried and married status (opposite to divorced and losing one's spouse), can enhance the employment ratio remarkably, while age variable or its square is not significant.

Then, can we draw a conclusion that unemployment is more likely to happen to women, lowly-educated individuals, non-party members and those who have poor health or lost their spouse? Let's make another comparison between unobserved employment people and real unemployed people. We can see that there are only three significant variables left, i.e. male and very good health as well as age. Male character can increase employment ratio by 0.951 (unobserved employment is also taken as employment), while a good health can elevate employment ratio by 2.192 times. That is to say, considering the widespread existence of unobserved employment, all the characteristics for unemployed people which we obtained from the comparison between real unemployed people and observed employment people are not necessarily important reasons for unemployment, understanding of which is especially important for the making of labor market policies and distributing public resources for real unemployed group. Specifically, it is possible that real unemployed people are not necessarily lowly educated, non-party member or bad marital status. But we are sure that women and bad health are two characteristics of the real unemployed people, while it is easier for men and people with good health to find new jobs.

2. Occupational characteristics

What occupational characteristics do unobserved employment have? For this question, we can reach a general understanding by comparing the occupational characteristics of unobserved and observed employment people. The comparison results are presented in Table 6 and we follow a similar variable construction of population characteristics for each occupational characteristic, such as employment status, industry, unit type, occupation, labor contract, labor union and social insurance.

Firstly, let's look at the employment status. Among the unobserved employment group, self-employed people account for 16%, while the proportion in observed employment people is only 4%. The gap is 12% and at least significant at the 1% level. That is to say, compared with observed employment jobs, unobserved employment people are more likely to take up self-employment.

Industry and unit type are two key occupational characteristics. We can see from Table 6 that unobserved employment is more concentrated in social service industry as well as wholesale, retailing and catering industry. The proportion of unobserved employment people in these two industries accounts for more than 50% of all unobserved employment people (32% and 26% respectively) and both proportions are notably higher than observed employment people (15% and 12% respectively). Moreover, manufacturing industry as well as transportation and storage industry

also pools 24% unobserved employment people. It is worth mentioning that the proportion of unobserved employment people in manufacturing industry is not high and 10% lower than observed employment group, which is significant at least at the 1% level.

Next, we look at unit ownership type. Among all the unobserved people, those who are employed by privately-owned enterprises accounts for 44%, far higher than corresponding proportion (21%) in observed employment people and the difference is highly significant. The proportion of unobserved employment people in the individual enterprises is 6%, also notably higher than corresponding proportion (2%) in observed employment people. However, the situation for state-owned and foreign-owned enterprises is just the opposite and they only pool 20% unobserved employment people (19% and 1% respectively), notably lower than corresponding proportion (34% and 11%) in observed employment group. Moreover, there are no essential differences for the proportion of unobserved employment people in the institutional and collectively owned enterprises.[1]

Table 6: Differences between average values of occupational characteristics

Occupational characteristics		Unobserved employment	Observed employment	Differences	S.E.
Employment status	0-self-employed 1-employed by others	0.84	0.96	-0.12***	0.023
Industry	Manufacturing industry	0.13	0.23	-0.10***	0.045
	Transportation and storage industry	0.11	0.12	-0.01	0.035
	Wholesale, retailing and catering industry	0.26	0.14	0.12***	0.038
	Social services industry	0.32	0.17	0.15***	0.042
Unit type	Institutional enterprise	0.25	0.23	0.02	0.051
	State-owned enterprise	0.19	0.34	-0.15***	0.057
	Collectively-owned enterprise	0.04	0.04	0	0.025
	Privately-owned enterprise	0.44	0.21	0.23***	0.050
	Foreign-funded enterprise	0.01	0.11	-0.10***	0.037
	Individual workers	0.06	0.02	0.04***	0.019
Occupation	Professional technical personnel	0.16	0.28	-0.12***	0.057
	Personnel for handling affairs	0.33	0.33	0	0.060
	Personnel for business and service industry	0.33	0.19	0.14***	0.051
	Operational personnel for production and transportation facilities	0.19	0.14	0.05	0.045
Labor contract	0-not signed, 1-signed	0.47	0.82	-0.35***	0.047
Labor union	0-no, 1-yes	0.41	0.68	-0.27***	0.055
Social insurance	0-not provided, 1-provided	0.61	0.81	-0.20***	0.046

Note: a. social insurance in this table includes both basic and supplementary social insurances.

[1] It needs to be pointed out that we have made some selection and merging to the industry unit type as well as occupation, whose details can be found in annex table 1.

b. *, ** and *** means significant at the 10%, 5% and 1% level, respectively.

Then, let's look at occupations of unobserved employment people. We can see that most of them are personnel for handling affairs as well as personnel for business and service industry, each accounting for 33% of all unobserved employment people. The former is not significantly different from the proportion in observed employment people, while the latter is significantly different at least at the 1% level. To be specific, the proportion of personnel for business and service industry in the unobserved employment group is 14% higher than that in observed employment group. On the other hand, the proportion of professional and technical personnel in the unobserved employment people is 16%, significantly lower than that in observed employment group.

Whether there is a formal labor contract, the employment unit has a labor union or provides social insurances are three variables that can reflect the standardization of occupations to some extent. It can be seen from Table 6 that only 47% of all unobserved employees sign formal labor contract with their employment units, while the proportion in observed employment group is 82%, with a 35% gap and significant at least at the 1% level. It is interesting that 47% unobserved employees signed labor contract but were still treated as unemployed people by the government. We can see how disordered the labor market is! Viewing from the labor union, the proportion to have a labor union for unobserved and observed employment is 41% and 68% respectively, with the former proportion being 27% lower than the latter one. Similar situation arises for social insurances. The proportion to provide social insurance for unobserved employment is 61%, which is significant lower than 81% for observed employment.

In conclusion, by comparing occupational characteristics of unobserved employment and observed employment, we can reach the following conclusions: (1) unobserved employment people are more to be self-employed than observed employment people. (2) Unobserved employment occupations are relatively concentrated in the tertiary industry, such as social service industry as well as wholesale and retailing industry and catering industry. The proportion of unobserved employment people to be engaged in manufacturing industry is significant lower than that of observed employment people. (3) Privately-owned enterprises absorb almost half of the unobserved employment people, while unobserved employment people are not likely to work in state-owned enterprises and foreign-funded enterprises. (4) Unobserved employment people are more likely working as personnel for business and service, rather than professional technical personnel. (5) Unobserved employment has many irregularities, such as no formal labor contract, no social insurances and no labor union.

VI. Conclusions and Implications

Using Shanghai household survey data in 2005, our paper made the following conclusions about unobserved employment: (1) Unobserved employment rate is very high, and at least over 40% of registered unemployed or laid-off people actually hold jobs which bring them certain income. (2) Compared with the employed group, individuals who are middle-aged, lowly educated, married, divorced or bereft of his/her spouse are more likely to be engaged in unobserved employment, while individuals who are young, highly educated, unmarried or CPC members are inclined not to conceal their employment status. Gender and heath conditions do not exert a significant impact on whether the individuals conceal their employment status or not. (3) If we don't consider unobserved employed people as really unemployed, then the real unemployment-stricken groups are mostly

women and people with a bad health. (4) Viewing from employment status, unobserved employment is more concentrated in the industries with low technology, such as social service industry, working in the private enterprises, taking business service as their profession, and more likely to be self-employed. (5) Compared with observed employment, unobserved employment has many irregularities, such as no formal labor contract and social insurances.

Viewing from the results of data analysis, there may be great gap between real unemployment and statistical unemployment. Registered unemployment rate in urban areas publicized by government is not high and only a little over 4%, while unemployment rate based on survey is very high. Zhang (2003) used census data in 2000 and made estimation on the urban unemployment rate of the year and got 8.27%. Li and Deng (2004) used the CHIPS data in 2002 and made estimations on the unemployment rate with 4 different definitions, among which unemployment rate closest to international standard is 8.59%. If excluding rural workers as well as informal employment of laid-off and unemployed workers in urban areas, they reported an unemployment rate in urban areas as high as 12%. However, many registered unemployed people are taking up unobserved jobs. Therefore, there may be two gaps between unemployment statistics and real unemployment. On the one hand, there may be some unemployed people who don't have urban citizenship or employment experience (for example, fresh graduates), and are not brought into statistical system of unemployment registration. On the other hand, unemployment registration doesn't effectively distinguish real and unobserved employment and hence governmental labor market policies have not bee targeted at the real unemployed group effectively.

This research has several policy implications. Firstly, Chinese government needs to use the survey method and expand unemployment statistics to permanent residents (not only local residents who own *Hukou*), as well as effectively identifying unobserved employment people so as to master unemployment rate and macroeconomic situation more accurately, and to adopt carry out labor market policy and allocate public resources more effectively. Secondly, labor market policy should be used more effectively to help real unemployed people, especially to women and those with poor health condition. Moreover, unobserved employment people should try to improve their personal capabilities, employment quality and standardize their employment status.

References:

1. Dornbusch, R. and S. Fischer, 1994, *Macroeconomics*, McGraw-Hill, InC.
2. Gao, Yuze, 1998, "Institutional Analysis of Unobserved Employment," (in Chinese), *Management*, 1: pp. 202-205.
3. Li, Shi, and Quheng Deng, 2004, "Re-estimation of Urban Unemployment Rate in China," (in Chinese), *Dynamic of Economics*, 4, pp. 44-47.
4. Mo, Rong, 2003, "Employment: Attention to People with difficulties in Challenge,"in *Analysis and Forecasts of China Social Situation*, (in Chinese), Beijing: Social Science Literature Press.
5. Ren, Yuan, 2001, "Unobserved Employment and Employment Management," (in Chinese), *Population and Economy*, 4: pp. 45-50.
6. Research Team on Unemployment in Yangjing District, 2006, "Reports on Unemployment in Yangjing District, Shanghai," (in Chinese), unpublished.
7. Research Team on Unobserved Employment, 1998, "A Study on Unobserved Employment," (in Chinese), *Shanghai Labor and Wage Information*, 7.

8. Shanghai City Survey Team, 1999, “Unobserved Employment Exists in Laid-off Workers Reemployed: Survey and Analysis on 3000 Laid-off Workers in Shanghai,” (in Chinese), *Statistical Researc*h, 6: pp. 20-23.
9. Song, Xiaowu, 2001, *Reform of Social Security System in China*, (in Chinese), Beijing: Qinghua University Press.
10. Yu, Faming, 2001, *Construct Market-oriented Employment System*, (in Chinese), Beijing: China Labor and Social Security Press.
11. Yuan, Zhigang, and Ming Lu Ming, 1998, “Theoretical Analysis on Unobserved Employment,” (in Chinese), *Zhejiang Social Science*, 1: pp. 11-16.
12. Zhang, Juwei, 2003, “International Comparison of Definition on Unemployment Rate and Urban Unemployment Rate in China,” (in Chinese), *World Economy*, 5, pp. 47-54.
13. Zhang, Shifei, 2003, “Occupational and Personal Characteristics of Widespread Unobserved Employment: Evidence from Hangzhou Survey,” (in Chinese), *Journal of Hehai University (Social Science Edition)*, 5(4): pp. 45-50.

Annex Table 1: Specific comparisons of industry, unit type and characteristics of occupation(%)

	Characteristics of occupation	Unobserved employment	Observed employment
Industry	Farming, forestry, animal husbandry and fishery	0	0.81
	Mining and quarrying	0	0.41
	Manufacturing	13.33	22.98
	Production and supply of electricity, gas and water	2.22	2.85
	Construction	2.22	2.77
	Geological proseprcting and water conservancy	0	0.57
	Transportation and storage	11.11	11.57
	Post and telecommunications industry	2.22	2.04
	Wholesale and retail trade & cartering services	25.56	13.69
	Finance and insurance	2.22	3.50
	Real estate	1.11	1.87
	Social services	32.22	16.71
	Health care	2.22	3.59
	Sporting	0	0.08
	Social welfare	0	0.98
	Education	1.11	5.54
	Ratio, film and television	3.33	1.06
	Scientific research and polytechnical services	1.11	1.87
	Culture and arts	0	1.14
	Government agencies, party agencies and social organizations	0	5.95
Unit type	Party agencies and government agencies	0	5.19
	State-owned or collectively-owned institutional organization	20.83	19.93
	Private owned enterprises or institutional organizations	4.17	3.27
	Wholly state owned enterprise	8.33	21.19
	State holding enterprise	6.94	11.64
	Wholly-collectively-funded enterprise	2.78	1.93
	Collective holding enterprise	1.39	2.01
	Wholly private-funded enterprise	37.50	17.25
	Private holding enterprise	4.17	2.68
	Wholly foreign-funded enterprise	0	6.11
	Foreign holding joint enterprise	1.39	4.52
	State holding joint enterprise	4.17	1.42
	Collective holding joint enterprise	0	0.50
	Privately holding joint enterprise	2.78	0.84
	Individual Business Owners	5.56	1.51
Occupation	Head of government, party agencies, enterprises and institutional organizations	0	6.37
	Professional and technical personnel	15.63	27.62
	Personnel for handling affairs	32.81	32.83
	Personnel for business and service industry	32.81	18.83
	Personnel for farming, forestry, animal husbandry, fishery and water conservancy	0	0.36
	Operation personnel for production and transportation facilities	18.75	13.90