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Formal and Informal Employment in China: Probability of Employment and Determinants of Monthly Wages

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Abstract

The goal of this research is to ascertain the employment status probabilities and the determinants of monthly wages of employees in China in order to provide a much-needed, more accurate and widely acceptable documentation of informal employment in China on the basis of the International Statistical Standard Definition. This study will use Lee's model to correct for selection bias. The results show that employment status probabilities are mainly determined by sex, age, experience, ethnic status, education, region and migrant status, while monthly wages of informal employees are mainly affected by sex, education, region, firm size, city size and migrant status.

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1. Introduction

Informal employment has become an important component of the global labour market. In developing countries, informal employment has become the main type of employment. In Asia, in the 1990s, informal employment accounted for about 50–70 per cent of all urban, non-agricultural labour in developing countries. In Africa, over the same period, more than 90 per cent of all new jobs were created by the informal sector (ILO 2000a). Informal employment is also an important employment sector in developed countries. Informal employment generally accounts for 20–30 per cent of the total employment in developed countries and in some countries (such as Poland) it reaches 50 per cent and even above (Hu and Yang 2001). In China, Wu and Cai (2006) calculated that, at the end of 2002, the scale of informal employment in urban China had exceeded 120 million people. Yao (2006) showed that informal employment in urban China accounted for 51 per cent of the labour force in the urban area in 2002. However, the data on informal employment that have been obtained until now have not been reliable because they are based on the authors' own non-standardised definition.

The development of informal employment in China is conducive to the allocation of labour resources and provides employment for millions of people who probably would be otherwise unemployed, or at least worse off. However, according to various studies, informal employment has several negative impacts on those who are engaged in informal employment that should not be ignored.

First, the level of social welfare that workers in informal employment receive is significantly lower than for workers in formal employment.

In particular, in China in 2002, the ratio of formal workers who had joined the social endowment security system was 84.5 per cent and that of informal workers was 37.0 per cent. In the case of unemployment insurance, 72.5 per cent of formal and 20.7 per cent of informal workers were eligible for these benefits. For medical insurance, 61.5 per cent of formal and 14.1 per cent of informal workers were eligible (Wu and Cai 2006).

Second, as pointed out by the ILO (2002), informal workers and entrepreneurs receive little or no legal social protection. They are unable to enforce contracts and have minimal, if any, property rights security. In general, their employment is highly unstable and their incomes are very low and irregular. Third, because informal employment accounts for a big share of total employment, the widening wage gap between formal and informal employment contributes to social income inequality.

As indicated above, informal employment in China occupies a significant share of the labour market. It is also fraught with problems that affect the individual well-being of the labour population. Thus, informal employment in China is important enough to call for various policy changes.

The goal of the present study is to ascertain the employment status probabilities and determinants of monthly wages of employees in China in order to provide a much-needed, more accurate and widely accepted documentation of informal employment in China on the basis of the International Statistical Standard Definition (ISSD). Following Deng (2011), this study will use Lee's (1983) model to correct for selection bias. The results show that employment status probabilities are mainly determined by sex, age, experience, ethnic status, education, region and migrant status, while monthly wages of informal employees are mainly affected by sex, education, region, firm size, city size and migrant status. These findings are followed up by conducting a decomposition of the wage gap between formal and informal employees and the results show that the gap is primarily driven by differences in personal characteristics (70.4 per cent) rather than by discrimination in the labour market (29.6 per cent) and this result is consistent with Chen and Hamori (2011).

The analysis of the determinants of monthly wages of formal and informal employees could provide implications for improving individual well-being. For example, if there is gender discrimination in informal employment, the 'equal pay for equal work' policy should be promoted; if education is highly rewarded for informal workers, they should be encouraged to obtain more education. Ultimately, the data provided in this study can help to guide policy decisions for China's labour market.

Because informal employment has such a major impact on labour markets, a good deal of scholarship on this phenomenon has been conducted around the world. The origin of the present research can be traced back to 1993, when the 15th International Conference of Labour Statisticians (ICLS) adopted a conceptual framework of informal employment in terms of characteristics of enterprises and production units (sector), as well as in terms of the characteristics of persons employed (jobs; ILO 2000b).

The purpose of the study by Heintz and Posel (2008) was to look for evidence of segmentation across various categories of employment—between formal and informal employment and within types of informal employment. They used the definition adopted by the 17th ICLS and their study found evidence consistent with complex segmentation and significant earnings differentials between formal and informal employment in the South African labour market.

The most remarkable achievement of Günther and Launov (2012) was to provide new insight into the research question of whether informal sector employment is a result of competitive market forces or labour market segmentation. Following the legal definition of informal employment, as proposed by the ILO in 1993, their results showed that the informal sector includes both individuals for whom informality is a strategy of last resort to escape unemployment and individuals who have a comparative advantage in the informal sector.

In China, different aspects of informal employment have been studied, such as its definition (Hu and Yang 2001; Cai and Wang 2004; Wu and Cai 2006; Yao 2006). The definition of informal employment differs among scholars. In Section 3.1, a detailed definition will be provided. In the few previous empirical studies conducted in China, findings were mixed on the wage differential between formal and informal workers. Deng (2011) utilised the China Household Income Survey Project data and treated the following workers as informally employed: workers in private and individually owned enterprises (fewer than 100 employees), the self-employed and workers who do not have a long-term contract. With selection bias corrected, Deng found that the monthly earnings differentials between formal and informal employees are primarily caused by segmentation factors rather than characteristics. Using the China Health and Nutrition Survey data, Chen and Hamori (2011) defined informal employees as those who are self-employed, contractors with other people or enterprises, temporary workers or paid family workers. With selection bias corrected, their results indicated that differences between the characteristics of formal and informal employment account for a much higher percentage (76.35 per cent) of the hourly income differential than does discrimination in the labour market.

Although previous studies have appeared to have done sufficient research to explain the phenomenon of informal employment in China, they did not have adequate data to test their definitions or results. Furthermore, Deng (2011) and Chen and Hamori (2011) tried to apply the ISSD that was adopted by the ILO, but owing to data limitations, they did not succeed. They may have underestimated or overestimated the scale of informal employment; hence, their results are not so reliable and accurate.

To tackle the above-mentioned problems that have been confronted by previous studies, this study proposes a solution using the ISSD that was adopted by the 17th ICLS, together with the Chinese General Social Survey 2006 (CGSS2006) data, which are amenable to analysis using this standard definition of informal employment. This study used the ISSD because it can provide a much-needed, more accurate and widely acceptable result and can make international comparison studies possible.

This article is structured as follows. Section 2 is an introduction of the development of the Chinese labour market. In Section 3, the definition of informal employment, data, methodology and variables are discussed. Section 4 is an overview of formal and informal employment. Section 5 presents the empirical results. Finally, conclusions and policy implications are given in Section 6.

2. Chinese Labour Market

The urban and rural sectors of China were treated as separate entities during the central planning period, which began in 1949. Three main social-governing mechanisms were applied in this period: (i) the unified procurement and sales of agricultural commodities; (ii) the People's Communes that had governmental, political and economic functions; and (iii) the Household Registration System (Hukou System), which designated the legal place of residency, work and life for the entire population.

From a labour-market perspective, there were two sets of problems with these three mechanisms: (i) pervasive labour incentive problems; and (ii) severe misallocation of labour (Fleisher and Yang 2003). First, because of the commune-style organisation of community, the means of production were all owned by the communes and household sideline production was compressed. Thus, people gradually lost the incentive to work. Second, rural residents were made to work in agriculture because of the Hukou System, which designated them as rural residents. Before 1978, almost all employment was in agriculture in rural areas, which created a surplus of labour in agriculture.

In response to these two problems, the Chinese Government issued three reform policies, beginning in 1979. These policies helped initiate market-oriented development in rural China. The first was the change from

the People's Communes to the Household Responsibility System and the second was official increases in agricultural product prices. These two reforms helped solve the labour incentive problem and resulted in dramatic increases in labour productivity (Fleisher and Yang 2003).

The third reform policy was designed to modify the Hukou System, which was adopted by the Chinese Government in 1958; however, because of inefficient labour over-allocation to agriculture, the Hukou System has been modified in recent years to permit more flexibility. According to Meng (2003), the state policy regarding the control of rural worker mobility can be divided into six periods, as follows:

- 1958–1978: forbidding movement period. The urban population expansion was severely controlled during this time: rural residents could only live in places where their Hukou was registered.

- 1979–1983: controlled movement period. The National Work Conference in 1980 encouraged the operation of rural enterprises to absorb surplus labour in rural areas into non-agricultural activities. The State Council Document, 1983, No. 1 provided general guidelines that permitted skilled workers and craftsmen to leave farming and engage in a variety of non-agricultural activities.

- 1984–1988: allowing movement period. According to the Central Committee of the Communist Party's document, 'The Rural Working Announcement in 1984', farmers were permitted to work and conduct business in cities, provided they could secure their own staples. This resulted in random movement of labour from rural to urban areas, a phenomenon that was called the 'blind flood of migrants' (*mangliu*).

- 1989–1991: controlling random movement period. The General Office of the State Council issued 'Emergent Notification on the Strict Control of Migrant Workers into Urban Areas' to reduce the negative effects of random movement (for example, creating enormous pressure on transport and public security).

- 1992–2000: regulating movement period. The China Labour Ministry's document, 'To make Rural Labour Flow to Urban Areas Orderly', encouraged, guided and implemented the orderly flow of labour under macro control.

- 2000 onwards: fair movement period. The State Council released 'Announcement on the Further Exploitation of Rural Labour Pilot Project', removing various restrictions that prevent rural residents from going into urban areas to seek employment.

During these periods, a repatriation system was developed for preventing the migration from rural to urban areas. Until 2003, some rural workers who had migrated to urban areas were treated as 'illegal' migrants. Workers with rural Hukous in urban areas were often allocated to this system, restrained and then forced to repatriate to their home town. From 1961 to 1963, approximately 50 million rural workers repatriated to rural areas (Yang 2004). However, from 2003, after The State Council Document, 2003, No. 1, a number of important policies (for example, The State Council Document, 2004, No. 92; 2006, No. 5) was issued by the central government calling for the protection of rural migrant workers' legal rights and the removal of movement restrictions.

Presently, rural workers are free to move throughout China for employment. After restrictions on rural–urban migration were gradually lifted, the rural labour force migrated to seek employment in urban areas. The official statistics only cover employment in the formal sector and individual, private companies, but many of the rural migrant workers are engaged in jobs outside these two sectors, so they are not covered by the official statistics. From 1990 to 2004, the rural migrant workers who were not counted by the official statistics increased from 14 to 38 per cent of the labour force in urban areas (Hu and Zhao 2006). Thus, the official

statistics do not accurately reflect the number of labourers in urban areas, and in fact, there are millions of labourers in cities that are not counted.

The migration of labour from rural areas to urban areas is one of the most important factors in the rise of informal employment. As Cooke (2008) argued, during the 1980s and early 2000s, millions of farmers migrated to urban areas for employment. During this period, informal employment came to exist and rapidly grew in the labour market. Today, approximately 80 per cent of the labour force that migrated from the rural areas is working in informal employment (Shi 2007).

Besides migrant workers from rural areas, another important component of informal employment is laid-off workers from state-owned enterprises. In 1993, stated-owned enterprises started the policy of cutting payroll to improve efficiency. As the number of laid-off workers rapidly increased, the average annual growth rate of the laid-off workers became as high as 40 per cent (Yang 2007). The number of laid-off workers grew from 300,000 in 1993 to 18.7 million in 2001 (Yang 2007). These laid-off workers were forced to seek re-employment in the labour market. Jiang (2003) reported that, according to a survey carried out by the All-China Federation of Trade Union on re-employment of laid-off workers in selected cities, 80–90 per cent of the laid-off workers who regained employment in 1999 was engaged in informal employment.

In recent years, the government has been seeking to offer better employment protections and labour rights to workers, particularly those in informal employment. China has formulated its labour laws (New Labour Law, 2008) to protect the legitimate rights and interests of workers and to improve and maintain the socialist market economy labour system. However, because there still is no accurate and widely acceptable documentation on informal employment in China, the law itself is not perfect and requires improvement. It is the aim of this study to provide that much-needed data.

3. Definitions, Data and Methodology

3.1 Definition of Informal Employment

There are several definitions of informal employment among scholars in China, as mentioned previously. Here, two representative definitions are presented as follows:

- According to Hu and Yang (2001), informal employment in China includes informal sector employment in various categories and temporary employment, part-time employment, labour dispatch and sub-contract workers in the formal sector; namely, 'informal employment in the formal sector'.

- Cai and Wang (2004) defined informal employees as those who are not registered with the government or do not participate in social insurance or labour relationships are in a non-standard form.

Hu and Yang (2001) defined informal employment in terms of the characteristics of the production units; however, this definition ignored the characteristics of persons employed (job status and job nature). Cai and Wang's (2004) definition does not cover all the workers in informal employment; for example, laid-off workers may participate in the social insurance market, even though they are working in informal employment. Both are narrow definitions of informal employment.

As stated by Hussmanns (2004), the international definition of informal employment adopted by the ILO's (2002) report, 'Decent Work and the Informal Economy', was well received by the International Labour Conference, the Delhi Group and other meetings to which it had been presented, and in December 2003, the 17th ICLS adopted guidelines endorsing it as an ISSD (ILO 2003).

The ISSD disaggregates total employment according to two dimensions: type of production unit and type of job. Production units are classified into three groups: formal sector enterprises, informal sector enterprises and households. Following International Classification by Status in Employment-93, job status is as

follows: own-account workers, employers, contributing family workers, employees, members of producers' cooperatives and agricultural workers. Job nature is formal or informal job. According to the ICLS's definition, as shown in Table 1, employment in the informal sector consists of Cells 3–7, informal employment consists of Cells 1–9 and informal employment outside the informal sector consists of Cells 1, 2, 8 and 9.

Although the present study uses a definition of informal employment based on this conceptual framework that was developed by the 17th ICLS, there is a number of differences based on China's situation and the data, as follows. First, according to the 15th ICLS, agricultural and related activities are excluded from the scope of the informal sector. As a developing economy, around 70 per cent[1] of the country's labour force was engaged in agricultural activities in the early 1980s (291 million people in 1980). As the country developed, the number of agricultural sector workers was decreasing; however, agriculture still employed 43 per cent (see endnote 1; 326 million people) of the country's labour force by 2006. Moreover, because China is a socialist country, the agricultural sector is considered as a formal sector and farmers are formally employed under socialism. Therefore, it was decided to classify agricultural activities into a separate category, as Table 1 shows; however, they were excluded in the monthly wages analysis. Second, Chinese workers in foreign countries were not included in the analysis. The data from CGSS2006 do not have any information on household members working abroad.

Third, the CGSS2006 has no information that could be used to distinguish between members of producers' cooperatives and other job status. Thus, it is difficult to identify workers and jobs in the category of Cell 7 separately from the rest. As such, Cell 7 has no information (Table 1). Similarly, the data do not provide information that allows one to distinguish own-account workers or employees in households and formal or informal sector enterprises of production units by type. Thus,

Table 1 Conceptual Framework of Informal Employment[a] in China

Production unit by type	*Job by status in employment*[b]											
	Own-account workers		*Employers*		*Contributing family workers*		*Employees*		*Members of producers' cooperatives*		*Agricultural workers*	
	Informal	*Formal*	*Informal*	*Formal*	*Informal*		*Informal*	*Formal*	*Informal*	*Formal*	*Informal*	*Formal*
Formal sector enterprises					Cell 1		Cell 2					
Informal sector enterprises[c]	Cell 3		Cell 4		Cell 5		Cell 6		Cell 7			
Households[d]	Cell 8						Cell 9					

Notes: (a) Based on the definition developed by the 17th International Conference of Labour Statisticians.
(b) Dark grey cells refer to jobs that, by definition, do not exist in the type of production unit in question; light grey cells refer to formal jobs; and unshaded cells represent the various types of informal employment jobs.
(c) As defined by the 15th International Conference of Labour Statisticians (excluding households employing paid domestic workers).
(d) Households producing goods exclusively for their own final use and households employing paid domestic workers.
Source: Hussmanns (2004).

no information is available concerning Cells 8 and 9 (Table 1).

Accordingly, informal employment in this article is defined as the aggregate of Cells 1–6, with the possible contents of Cells 7–9 included in Cells 2–6. A person is considered employed if he or she has worked for at least 1 hour in a paid job in the week preceding the week of the survey or has worked more than 3 hours per day or more than 15 hours per week as an unpaid family worker or was engaged in agricultural activities for more than 3 months; students are excluded.

This study considers own-account workers and employers to be formal by job nature if they are registered. Moreover, employees are considered to be formal by job nature if the worker has an employment contract. Following the ILO's framework and suggestions (Hussmanns 2004), the individuals in firms with less than 10 workers are in the informal sector by product unit; however, because of the data limitations (the information on whether the paid employees in these firms are working in firms with under five workers or not is unavailable), workers working in firms with fewer than 10 workers are treated as informal employment.

As a socialist country, state-owned or collective-owned units in China are treated as the mainstay regarding ownership, so this study considers these units as the formal sector by production unit: the party and government organisations, state-owned or state shareholding enterprises, collective or collective shareholding enterprises, state-owned or collective-owned non-profit institutions and social groups. The self-employed; private enterprises; Hong Kong, Macao and Taiwanese enterprises; foreign capital enterprises; and other enterprises are considered to be part of the informal sector by production unit.

3.2 Data

The data used in this analysis are drawn from the CGSS2006. The survey was a nationwide, large-sample survey project, conducted jointly by the Hong Kong University of Science and Technology Survey Research Center and the Sociology Department of the People's University of China. It aimed to systematically monitor the employment, work and lives of the residents in urban and rural China, as well as certain current social issues. A total of 10,000 households from 28 provinces and cities was randomly selected. One member aged between 18 and 69 years old was randomly picked from each of those selected households and interviewed from September to October of 2006. Different from past survey data (for example, Chinese Household Project), the CGSS2006 has much more information on respondents' current job that enables researchers to analyse informal employment using the ISSD (for example, product unit) and this is particularly true for information allowing one to distinguish between formal and informal jobs.

Using the definition of employment described previously, a total of 3,664 individuals in the sample was found to be employed in the non-agricultural sector who could be identified as being engaged in formal or informal employment. There were 3,258 individuals in the sample who had worked but were not working during the survey period, or never had worked, so they were not included in the research. A total of 2,321 individuals in the sample was engaged in agricultural activities and 208 individuals in the sample were unemployed. This study will use the 3,664 figure of those who were engaged in formal and informal employment to conduct the analysis of employment status probabilities and determinants of employees' monthly wages.

3.3 Methodology and Variables

Because the entire labour force population was not employed and wages were not recorded, selection bias could arise if the analysis were based only on the observed wages of workers. Considering that the choice of employment status in this study is not binary, following Deng (2011), this study adopts Lee's (1983) approach as an extension of a previous study by Heckman (1979) to correct for the selectivity bias in the case of multiple choices.

In the first stage of Lee's approach, a multinomial logit model for explaining the employment status probabilities has to be estimated. The selectivity correction term

obtained from the first stage probability model is included in monthly wage functions as an additional explanatory variable in the second stage to correct for the selectivity bias in wage functions.

Lee's approach can be explained with a categorical variable, where $s = 1 \ldots M$ choices based on individual utilities, as follows:

$$y_s^* = z_s'\gamma_s + \eta_s \quad (1)$$

where z_s' and η_s compose a vector of independent variables and the disturbance term. The impact on the dependent variable is observed only for the case where the alternative, s, is chosen, which occurs when:

$$y_s^* > \max_{j \neq s}(y_j^*) \quad (2)$$

$$\varepsilon_s = \max_{j \neq s}(y_j^* - \eta_s); \varepsilon_s < 0 \quad (3)$$

In the case of this study, $s = 1$, 2, 3 and 4 represents four types of mutually exclusive employment status, respectively: (i) formal employees; (ii) informal employees; (iii) the unemployed; and (iv) non-employees (workers in formal and informal employment who are not employees: employers, own-account workers and family workers). The independent variables, $z_1' \ldots z_M'$, are classified as six groups: (i) demographic; (ii) education; (iii) location; (iv) firm size; (v) occupation; and (vi) industry.

The independent variables used are defined as follows. As part of the demographic variables, 'male' denotes the male sex and the reference category is 'female'. 'Married' denotes marital status. 'Age' denotes age in one of five groups. 'Experience' denotes current job experience in years and 'experience squared' is self-explanatory. 'Head of household' is a dummy variable that takes the value of 1 if the employee is the head of a household and 0 otherwise. 'Han' is an ethnic status dummy and it takes the value of 1 if the employee is Han majority and 0 for non-Han minority. It is an important indicator because over 90 per cent of China's population is Han majority. The impact of education is indicated by the 'total education years'.

There are five occupational variables that are defined according to the one-digit classification of the International Standard Classification of Occupation-88: managerial, professional, technical, clerical and skilled agricultural workers. Skilled agricultural workers are the reference group. The industrial sector of employment is captured by two dummy variables: manufacturing and services. Manufacturing is the reference group. There are seven variables related to firm size, based on the number of employees: between 0 and 9, between 10 and 15, between 16 and 49, between 50 and 99, between 100 and 499, more than 500 employees, and firm size not reported. The reference category is firms with more than 500 employees.

Of the spatial variables, there are three variables related to region: East, Middle and West region. The East region is the reference category. 'Big city' is a dummy variable that takes the value of 1 if the employee is in the provincial capital cities or the four municipalities directly under the central government, which are Beijing, Shanghai, Tianjin and Chongqing, and 0 otherwise. 'Urban sample' is a dummy variable that takes the value of 1 if the employee is in an urban area and 0 otherwise. 'Migrant' is a dummy variable that takes the value of 1 if the employee is a domestic migrant and 0 otherwise. In the next section, an overview of informal employment in China will be presented by focusing on the extent and characteristics of informal employment.

4. Overview of Formal and Informal Employment in China

4.1 Extent and Nature

The extent and nature of formal and informal working individuals are presented in Table 2. The majority of these individuals, 70.99 per cent, was engaged in informal employment. This confirmed that informal employment accounts for an overwhelming majority of all the labour force in China. Within this 70.99 per cent of informal workers, 71.09 per cent worked in the informal sector, while the remaining 28.91 per cent were in the formal sector. This implies that informal employment

Table 2 Extent and Nature of Formal and Informal Employment in China, 2006

Informal employment	*Cell reference in Table 1*	*Number of workers*	*% of total informal employment*
Informal employment in formal sector	–	752	28.91
Contributing family workers	Cell 1	8	0.31
Employees in informal job in formal sector enterprises	Cell 2	744	28.60
Informal employment in informal sector	–	1,849	71.09
Own-account workers in informal sector enterprises	Cell 3	793	30.49
Employers in informal sector enterprises	Cell 4	170	6.53
Contributing family workers in informal sector enterprises	Cell 5	52	2.00
Employees in informal sector enterprises	Cell 6	834	32.06
Urban informal employment	–	1,927	74.09
Rural informal employment	–	674	25.91
Total informal employment	–	2,601	–
Total employment	–	3,664	–
Informal employment as % of total employment	–	70.99	–

Formal employment	*Number of workers*	*% of total formal employment*
Formal sector enterprises employment as % of total formal employment	767	72.15
Informal sector enterprises employment as % of total formal employment	296	27.85
Urban formal employment	988	92.94
Rural formal employment	75	7.06
Total formal employment	1,063	–
Total employment	3,664	–
Formal employment as % of total employment	29.01	–
Agricultural workers	2,321	–

Source: The author calculated this table's values using Chinese General Social Survey 2006.

in the formal sector also accounts for a substantial proportion of the entire informal employment.

Employees in informal sector enterprises accounted for the largest proportion of informal employment in the informal sector (32.06 per cent), followed by own-account workers (30.49 per cent). The vast majority of informal employment (74.09 per cent) was urban informal employment.

4.2 Characteristics of Formal and Informal Workers

In a preliminary step, Table 3 provides descriptive statistics on workers' characteristics by denoting the proportion of workers in four groups: formal employees, informal employees, non-employees and the unemployed. Mean values reported in the table indicate significant differences in observable individual characteristics across different groups.

Education differs a lot among individuals in the four groups. On average, formal employees were significantly more educated than the other three groups, followed by the informal employees group. The proportion of those who attended college among formal and informal employees was 34 and 21 per cent, respectively. It is noteworthy that there were significantly less educated (not more than 12 years of education) workers in the non-employee and unemployed groups. Formal employees were significantly younger (aged less than 40 years) than the other three groups, while the non-employees were the oldest (aged more than 40 years). It indicates that formal employees are more attractive, educated and younger workers than informal

Table 3 Share of Employment in Formal and Informal Employment in China, 2006[a] (%)

	Formal employee	*Informal employee*	*Non-employee*	*Unemployed*
Demographics				
Male	58.06	56.40	56.20	52.88
Female	41.94	43.60	43.80	47.12
Married	74.27	76.62	85.76	71.63
Age (years)				
18–29	30.82	28.33	19.90	29.33
30–39	36.19	30.48	35.90	32.69
40–49	24.13	27.57	28.88	28.37
50–59	8.58	11.91	12.10	9.13
60–69	0.28	1.71	3.22	0.48
Rural Hukou	13.57	35.17	54.34	25.48
Urban Hukou	86.43	64.83	45.66	74.52
Total education (years)				
<6	2.36	13.81	22.34	11.06
7–12	59.85	63.24	69.46	76.92
13–16	34.02	20.98	7.80	11.54
17–22	3.77	1.96	0.39	0.48
Occupation				
Managerial	8.58	10.52	77.37	–
Professional	23.19	17.17	6.24	–
Technical	18.94	15.46	0.20	–
Clerical	12.16	17.62	4.78	–
Skilled agricultural	37.13	39.23	11.41	–
Industry				
Manufacturing	38.95	29.12	10.24	–
Services	61.05	70.88	89.76	–
Location				
Rural sample	7.07	22.69	30.83	10.58
Urban sample	92.93	77.31	69.17	89.42
East region	52.78	47.21	40.39	41.35
Middle region	31.76	32.89	40.88	46.15
West region	15.46	19.90	18.73	12.50
Migrant	13.20	21.55	20.98	19.71
Non-migrant	86.80	78.45	79.02	80.29
Firm size (no. of employees)				
Not reported	17.72	18.19	5.66	–
0–9	–	18.88	90.44	–
10–15	3.49	9.51	1.66	–
16–49	10.18	15.84	1.46	–
50–99	11.31	8.05	0.29	–
100–499	28.56	18.19	0.20	–
>500	28.75	11.34	0.29	–
Total (number)	1,061	1,578	1,025	208

Note: (a) Agricultural workers are not included in this table.

Source: The author calculated this table's values using Chinese General Social Survey 2006.

employees. Those who are less educated may work as non-employees to escape unemployment or they just become unemployed.

The distribution of the four groups follows a clear geographical pattern. Formal and informal employees were more predominantly in the East region. As opposed to formal and informal employees, the non-employees and unemployed mostly appeared in the Middle region. The East region is the most developed region in China; it provides employment to migrant workers from the Middle and West region. However, as the

able workers in the Middle region are more likely to move out of the region for employment than workers in the West region (Li 2009) and there are not enough employment opportunities locally, the left-behind workers in the Middle region are more likely to be non-employees or unemployed than workers in the West region.

Formal employees were more predominantly in large firms (more than 100 employees) than informal employees, while the informal employees were more predominantly in small firms (less than 50 employees). It seems that formal employees are superior to informal employees in such a working environment as establishment size.

Formal and informal employee groups were dominated by the urban Hukou individuals (86 per cent of the formal employees, 65 per cent of the informal employees). However, the non-employee group was dominated by the rural Hukou individuals. Taking into consideration the sample size of each group, despite a minority of rural Hukou individuals in the whole sample, more rural Hukou individuals than urban Hukou individuals were non-employees. It implies that the Hukou System still had a strong effect on individuals' work life in 2006. Even rural Hukou individuals nowadays are free to move throughout the country, as they do not have the same employment opportunities as urban Hukou individuals.

As for other variables, it is easy to notice that sex distribution across different groups is relatively the same. Men accounted for the majority of each group, which is consistent with the case in Sri Lanka (Gunatilaka 2008). Most of the workers in each group were married. The services industry was over-represented in each group, except the unemployed group. As 80 per cent of the whole sample was an urban sample, the overwhelming majority of individuals was non-migrant.

Lastly, to obtain an overview of monthly wages for all employees, the mean monthly wage of employees by wage tercile (the highest, the middle and the lowest) was calculated. As can be seen from Table 4, the mean wages are significantly different between formal and informal employees. On average, formal employees had higher wages than informal employees: the mean wage ratio was 1.44. The lowest tercile contributed most to the wage gap: the mean wage ratio in this range was 1.65. Mean tests confirmed that formal employees earn significantly more than informal employees.

5. Empirical Results

As mentioned in the methodology section, this study used Lee's (1983) model to calculate the probability of formal and informal employment and then investigated the determinants of monthly wages of formal and informal employees. These results were followed up by decomposing the wage gap between formal and informal employees to ascertain the factors that contribute to the wage gap. As monthly wages do not comprise the income for non-employees, the determinants of wages for the non-employee group will not be reported. Notably, this study applied Lee's model in the same way as Deng (2011) to correct for sample selection bias, so the results of the analysis in the present study can be hypothesised to be caused by the difference in the definition of informal employment.

Table 4 Mean Wage of Formal and Informal Employees in China, 2006 (RMB)

	Formal	*Informal*	*Formal/informal ratio*
Monthly wage (mean)	1,696.79	1,181.62	1.44
Mean monthly wage by wage tercile			
Highest	3,093.26	2,333.02	1.33
Middle	1,324.22	961.85	1.38
Lowest	764.96	463.03	1.65
Total (number)	1,061.00	1,578.00	–

Source: The author calculated this table's values using Chinese General Social Survey 2006.

5.1 Probability of Formal and Informal Employment in China

Table 5 presents the marginal effects of Lee's (1983) model's first-stage multinomial logit model. The results of the employment status probabilities in China are indicated in terms of variables related to demographics, education and location. It is evident that the probability of a man becoming a formal employee was 3.6 per cent higher than for a woman, which is consistent with Deng (2011). However, men were a little less likely to be non-employees than women. The results indicate that female workers are suffering from employment status discrimination in China's labour market, besides employment discrimination (Guo 2009) and industry discrimination (Wang 2005). In addition, male family workers' proportion was much lower than that of females' proportion, which contributed to their lower probability of being non-employees.

Age also influences the probability of different employment status. People in their 60s had a higher probability of being formal employees, but the lowest probability of being informal employees and non-employees. In contrast, people in their 40s and 50s had a much lower probability of being formal employees, but a higher probability of being informal employees. Many people in their 40s and 50s are laid-off workers from the stated-owned enterprises (Kang 2003). Because of poor education before 1978 and heavy family burdens, it is difficult for them to be employed as formal employees. Meanwhile, the employment status of those in their 60s may be because of lifetime employment under socialism at their age. It also can be observed that younger workers (people under 40) were more likely to be formal employees but less likely to be

Table 5 Determinants of Employment Status Probabilities: Marginal Effects of Multinomial Logistic Estimates, 2006[a]

	Formal employee	*Informal employee*	*Non-employee*
Demographics			
Male[b]	0.036 (2.29)**[c,d]	0.007 (0.39)	–0.042 (–2.49)***
Age[b] (years)			
<29	–0.227 (–6.01)***	0.121 (2.67)***	0.127 (3.36)***
30–39	–0.208 (–5.50)***	0.092 (1.99)**	0.130 (3.42)***
40–49	–0.280 (–7.44)***	0.166 (3.64)***	0.126 (3.35)***
50–59	–0.316 (–7.50)***	0.215 (4.36)***	0.120 (2.96)***
60–69	Reference	Reference	Reference
Married[b]	–0.059 (–3.23)***	–0.023 (–1.03)	0.110 (5.37)***
Head of household[b]	–0.054 (–3.23)***	–0.022 (–1.11)	0.084 (4.92)***
Han[b]	–0.127 (–4.70)***	0.086 (2.55)***	0.069 (2.44)**
Experience[b]	0.006 (6.97)***	–0.002 (–1.63)*	–0.004 (–4.55)***
Education			
Total education years	0.025 (11.67)***	0.003 (1.26)	–0.024 (–11.59)***
Location[b]			
Urban sample	0.100 (4.49)***	–0.098 (–4.40)***	–0.044 (–2.57)***
East region	Reference	Reference	Reference
Middle region	–0.053 (–3.39)***	–0.004 (–0.22)	0.043 (2.86)***
West region	–0.075 (–3.78)***	0.078 (3.58)***	0.019 (1.02)
Big city	0.043 (2.89)***	0.042 (2.30)**	–0.078 (–4.67)***
Migrant[b]	–0.068 (–3.38)***	0.071 (3.35)***	0.001 (0.05)
Probability	0.280	0.405	0.260
Number of observations	1,061	1,578	1,025

Notes: (a) The base category is unemployed.
(b) Represents a discrete change in the dummy variable from 0 to 1.
(c) Data in parentheses are the *Z*-values.
(d) ***, ** and * denote statistical significance at the 1, 5 and 10 per cent level, respectively.

Source: The author calculated this table's values using Chinese General Social Survey 2006.

informal employees than older workers (people in their 40s and 50s), which confirms the results in the last section that formal employees are more attractive younger workers. As for non-employees, the probability had no significant difference among workers aged less than 60 years.

Both married workers and head-of-household workers had lower probabilities of becoming formal employees and higher probabilities of becoming non-employees, respectively. The married or head-of-household workers have family support to start their own business and therefore the chance to earn more than formal employees.

In addition, ethnic status is powerful in explaining the probabilities of employment status. Compared with non-Han minorities, the Han majority was less likely to be formal employees, but more likely to be informal employees and non-employees. While this finding may be unexpected, it is significant that the Han majority is more concentrated in more developed areas and that the jobs created are more likely to be for informal employees and non-employees, while the non-Han minorities are more concentrated in less developed areas and that the service provided by informal employees and non-employees is not so needed.

Experience is a strong predictor of the probabilities of employment status. Clearly, more years of experience significantly increase the probability of becoming a formal employee. In contrast, as the years of experience increase, the probability of becoming informal employees and non-employees will decrease.

In line with conventional wisdom, total education years had positive effects on the probability of becoming formal employees. On the other hand, total education years had a negative effect on non-employees. The results are consistent with Deng (2011). As for informal employees, education years had no significant effect. This result confirms that the more educated workers are more likely to be employed. Meanwhile, those less educated workers are more likely to be non-employees in order to escape from unemployment.

Sample type also influences the probability of employment status. Urban samples were more likely to be formal employees, but less likely to be informal employees and non-employees. Basically, there are many more formal jobs in urban areas than in rural areas.

In addition, even after controlling for several personal characteristics, regional effects are still significant. People in the Middle and West regions were less likely to be formal employees than those in the East region because there were more formal jobs in the East region than in the other two regions. The results indicate that employment status differs greatly among regions.

There are, undoubtedly, other factors at the city level that affect the probability of employment status, suggested by the significant coefficients of the dummy variable for 'big city'. People in big cities are more likely to be employed and work as formal or informal employees than to be non-employees. As expected, whether one is a domestic migrant or not mattered for formal and informal employees, as it reduced the probability of being a formal employee and increased the probability of being an informal employee. This result indicates that domestic migrant workers are discriminated against in terms of employment status.

5.2 Determinants of Monthly Wages of Employees in China

In Table 6, statistics on monthly wages for informal employees are provided in terms of variables related to demographics, education, location, firm size, occupation and industry. For the purpose of comparison, Table 6 also provides estimation results of monthly wages of formal employees.[2]

Men enjoyed a higher level of monthly wages, both for formal and informal employees (17 and 23 per cent, respectively). It confirms that there was gender wage discrimination in China (Wang 2005) and it is consistent with Deng (2011) and Chen and Hamori (2011). Furthermore, informal female employees are more discriminated against than their formal counterparts.

Table 6 Determinants of Monthly Wages, All Employees in China, 2006

	Formal employee	*Informal employee*
Demographics		
Male[a]	0.172 (4.62)***[b,c]	0.232 (6.55)***
Age (years)[a]		
<29	0.235 (0.65)	0.380 (2.20)**
30–39	0.213 (0.59)	0.278 (1.64)*
40–49	0.211 (0.59)	0.269 (1.54)
50–59	0.363 (1.02)	0.237 (1.37)
60–69	Reference	Reference
Experience	0.016 (1.90)*	0.015 (2.35)**
Experience squared	–0.000 (–1.65)*	–0.000 (–1.78)*
Education		
Total education years	0.052 (5.83)***	0.053 (8.58)***
Location[a]		
East region	Reference	Reference
Middle region	–0.366 (–8.45)***	–0.200 (–5.71)***
West region	–0.482 (–8.47)***	–0.315 (–6.98)***
Big city	0.158 (4.01)***	0.296 (8.86)***
Migrant[a]	0.229 (3.96)***	0.203 (4.71)***
Firm size (no. of employees)[a]		
Not reported	–0.170 (–2.48)***	–0.140 (–1.87)*
0–9		–0.454 (–6.19)***
10–15	–0.331 (–2.44)**	–0.355 (–3.91)***
16–49	–0.205 (–2.34)**	–0.192 (–2.35)**
50–99	–0.137 (–2.26)**	–0.063 (–0.81)
100–499	–0.111 (–2.44)**	–0.045 (–0.69)
>500	Reference	Reference
Occupation[a]		
Managerial	0.458 (5.43)***	0.073 (0.85)
Professional	0.198 (3.37)***	0.100 (1.93)**
Technical	–0.014 (–0.24)	–0.019 (–0.36)
Clerical	–0.057 (–0.89)	–0.046 (–1.00)
Skilled agricultural	Reference	Reference
Industry[a]		
Manufacturing	Reference	Reference
Services	0.072 (1.60)	0.096 (2.27)**
Pseudo R^2	0.540	0.540
Constant	6.278 (15.14)***	5.920 (27.19)***
Number of observations	1,061	1,578

Notes: (a) Represents a discrete change in the dummy variable from 0 to 1.
(b) Data in parentheses are the *Z*-values.
(c) ***, ** and * denote statistical significance at the 1, 5 and 10 per cent level, respectively.

Source: The author calculated this table's values using Chinese General Social Survey 2006.

For formal employees, age is not a statistically significant indicator; however, there is a trend that younger workers enjoy a higher wage for informal employees. In the stated-owned or collective-owned enterprises, wage allocation was based on egalitarianism and efficiency was ignored (Sheng 2009): wages would not significantly differ among formal employees. For the young informal employees, a possible explanation could be that because of the job characteristics of informal employees, the work may demand great physical strength or the workers need to work with a high intensity of labour and the younger workers (younger than 40) are more powerful and work more efficiently than older workers (older than 40).

Working experience and its square term also affect monthly wage significantly. Monthly wage increased with work experience, then peaked and thereafter declined, for both formal

and informal employees. Education also plays an important role in explaining monthly wages for both groups of workers. It is noteworthy that the effects of experience and education on monthly wages of both formal and informal employees were almost the same. It indicates that informal employees' characteristics of experience and education are rewarded in the same way as formal employees in the labour market. Thus, the wage gap between formal and informal employees may primarily be driven by the differences in such characteristics.

Region is an important indicator of monthly wage for both groups of workers. Monthly wage is the highest in the East region, followed by the Middle region, and then the West region. This result confirms the statements in previous studies that wages of workers from different regions differ greatly (for example, Zhong 2006; Deng 2011; Fan and Zhang 2009) because the East region is the most developed region in China.

There is an approximately 20 per cent wage premium for both formal and informal employees in big cities. The per capita annual living expenditure of urban households by region (2006) data, drawn from the China Urban Life and Price Yearbook 2007, which was compiled by the Department of Urban Society and Economic Statistics, shows that the mean total consumption expenditures in the four municipalities directly under the central government was 17,352 RMB, while the national average was 11,882 RMB; the former is about 1.5 times higher than the latter. So, it indicates that such a wage premium for employees in big cities only compensates for their higher costs of living. This 20 per cent wage premium can be named the 'Beijing effect' or 'Shanghai effect' and corresponds closely to the higher costs of living compared to those in the non-big cities in China.

Domestic migrant formal and informal employees earn higher monthly wages than non-migrants. It seems beyond expectation, but the migrant employees worked much longer hours than their non-migrant counterparts (approximately 20 hours and over 30 hours monthly for formal and informal employees, respectively). Although previous studies show that domestic migrant workers are hourly wage-discriminated (for example, Xie and Yao 2006), the results of this study indicate that domestic migrant employees can earn higher monthly wages than non-migrants by working hard.

Firm size has significant effects on monthly wage for both formal and informal employees with the negative sign. Monthly wage increased with firm size for formal employees; however, the results were only significant for informal employees in firms with less than 50 workers. The results show that there was an establishment-size wage premium for formal employees. However, the monthly wages of informal employees in firms with more than 50 workers were not significantly different; meanwhile, the informal employees in the smallest firms (0–9 employees) suffered the most from low monthly wages.

For formal employees, managerial and professional workers earned higher monthly wages than other workers, especially managerial formal employees. For informal employees, professional workers earned higher monthly wages than other workers. It indicates that professional knowledge is rewarded for both formal and informal employees.

Industry is also an important indicator to explain the monthly wage. The results show that informal employees in services earned higher wages than in manufacturing, but the results for formal employees were not significant.

5.3 Decomposition of the Wage Gap between Formal and Informal Employees

Following Chen and Hamori (2011), this study used Oaxaca's (1973) model to decompose the observed wage gap between formal and informal employees into two parts: one part that can be explained by differing characteristics and the other is an unexplained part owing to differences in the parameters of the wage function, which can be attributed to labour market discrimination and other omitted variables. Table 7 presents the impact of the independent variables on the two parts of the wage gap.

The decomposition results indicate that, among different characteristics of formal and

Table 7 Decomposition of the Wage Gap between Formal and Informal Employees in China, 2006

	Explained		*Unexplained*	
Variable	*Coefficient*	*P-value*	*Coefficient*	*P-value*
Experience	0.010	0.004	0.011	0.808
Education	0.100	0.000	–0.044	0.656
Region	0.019	0.003	0.200	0.000
Big city	0.028	0.000	–0.048	0.018
Migrant	–0.019	0.000	–0.003	0.747
Firm size	0.122	0.000	0.034	0.718
Occupation	0.005	0.235	–0.485	0.000
Industry	–0.009	0.027	–0.103	0.455
Total	0.257	0.000	0.108	0.000

informal employees, total education years accounted for a large percentage of the wage gap; that is, approximately 0.10. On the other hand, firm size also accounted for a large percentage of the difference, at approximately 0.12. With respect to the unexplained part, region accounted for approximately 0.20 of the wage gap. On the other hand, return to occupation accounted for –0.49 of the wage gap. This is interpreted in the sense that region and occupation contribute to the discrimination between formal and informal employees in China.

The results presented in Table 7 indicate that the wage gap between formal and informal employees is primarily driven by differences in characteristics (70.4 per cent) rather than by discrimination in the labour market (29.6 per cent) and this result is consistent with Chen and Hamori (2011).

6. Conclusions and Policy Implications

The importance of a study on informal employment in China using ISSD is confirmed by this study's findings that informal employment represents the majority of workers in China and that these informal employees receive lower wages than their formal counterparts. Workers engaged in informal employment accounted for 70.99 per cent of all people employed, which means that informal employment was the main way of obtaining employment in China in 2006. Furthermore, informal employees have a much lower mean wage than that of formal employees. The mean wage ratio of formal to informal employees is 1.44, which verifies the conclusion of ILO (2002) that informal workers' incomes are very low in general. Therefore, informal employment carries serious policy implications.

Unfortunately, there have been few empirical studies on the details of informal employment to provide data for policy-makers. Therefore, the aim of this study was to provide much-needed, more accurate and widely acceptable documentation on informal employment in China, based on the ISSD adopted by the 17th ICLS. To accomplish this, the study relied on the CGSS2006 data and used Lee's (1983) model to ascertain the employment status probabilities and the determinants of monthly wages of formal and informal employees in China. The findings show that employment status probabilities are mainly determined by sex, age, experience, ethnic status, education, region and migrant status, while sex, education, region, firm size, city size and migrant status are important indicators affecting informal employee's monthly wages. These findings were followed up by conducting a decomposition of the wage gap between formal and informal employees and found that the gap is primarily driven by differences in characteristics rather than by discrimination in the labour market.

Based on the results, this study shed light on the differences in probability of employment status and determinants of monthly wages between formal and informal employees. The main implications drawn from the analytical results are as follows. First, the results provide evidence that there is not only gender wage discrimination but also gender employment

status discrimination in China for all employees. An 'equal pay for equal work' policy should be promoted to decrease gender wage discrimination and policies (for example, reward system) encouraging enterprises to provide formal employment opportunities to individuals without regard to sex can be implemented to decrease gender employment status discrimination.

Second, the results show that education has a positive effect on the probability of becoming a formal employee and plays an important role in explaining monthly wages for both formal and informal employees. It implies that the educational environment can be optimised to promote individual education levels, which could improve not only people's monthly wages, but also their employment status. Furthermore, the wage gap decomposition results show that education accounts for a large percentage of the wage gap, so promoting education among workers will also contribute to reducing wage income inequality.

Third, both probability of employment status and employees' monthly wages differ significantly among regions, which implies an imbalance in regional development in China. The considerably expanded development gap between the East and the rest of the regions could become a long-term problem and affect China's labour policy. Fundamentally, the central government should create more formal employment opportunities and improve the income level in the Middle and West regions. For example, the Western Development project should be promoted more effectively to put more state investment into these two regions to develop the infrastructure, ecological environment and education.

Finally, it is evident that domestic migrant workers are more discriminated against on the basis of employment status than their non-migrant counterparts, although they can earn higher monthly wages by working much longer hours. This finding suggests that, even for migrant workers who can move throughout the country to seek employment, domestic migrant workers cannot integrate into the societies that they move into. The Hukou System has been modified greatly to provide flexibility; however, it should be abolished to realise a true equal labour movement.

As mentioned above, empirical analyses and interpretations provided in this study only rely on one set of cross-sectional data (CGSS2006); therefore, this study does not fully capture the complexity of informal employment. However, access to more recent quality data is still very much restricted. It is thus difficult to draw inferences for the most recent period and reflect on the dramatic changes in labour market conditions; this is an area for future research. Nevertheless, the results presented in this article represent an important first step in exploring informal employment issues in China.

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Endnotes

1. The author calculated this value according to the China Statistical Yearbook.

2. The selectivity bias is insignificant, which implies that the selectivity bias is not so serious in my data. However, the ordinary least squares results are available from the author on request.

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