Master Programme in International Economics with a focus on China

Job Satisfaction and Its Determinants among Chinese Rural-to-urban Migrant Workers

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Abstract: Job satisfaction has been proved to be negatively correlated with labor mobility (Freeman, 1977). China faces a huge labor shortage and this problem worsens as migrant workers stay at their home provinces. This paper examines job satisfaction and its determinants among Chinese rural-urban migrant workers. This analysis is based on a number of previous theoretical and empirical studies. Data is used from the Chinese Household Income Project (CHIP) 2002 Rural-urban Migrant Household Survey. Migrant workers' job satisfaction is proved to be much more sensitive to expected future income, and this paper ascertains the positive relations between expected future income and job satisfaction. Unlike previous studies, this paper finds that the greater the geographical distance is between a rural-urban migrant worker' home province and current working province, the lower the migrant worker' job satisfaction. However, the job satisfaction can be augmented if migrant workers have many friends in their working cities. Additionally, migrant workers' job satisfaction is an inverted U-shaped curve in educational attainment. Being discriminated against by urban workers lowers migrant workers' job satisfaction. This study carries some policy implications – softening institutional restrictions, enhancing the enforcement of the Labor Law, and emphasizing education in rural China – which may abbreviate the rift of the great labor shortage.

Keywords: Chinese rural-urban migrant workers, Job satisfaction, Institutional segregation, labor shortage, Policy implication

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CHIP-Chinese Household Income Project

NBS – National Bureau of Statistics

PRC – People's Republic of China

SOEs – State-owned Enterprises

1. Introduction

That rural-urban migrant workers have fueled Chinese economic growth rates over the last three decades is hardly contentious. According to the Statistic Communique of the People's Republic of China on the 2012 National Economic and Social Development, the number of total migrant workers has reached to 262.61 million. The huge wave of migrants constitutes the largest intra-country migration in human history and its potential economic and social impacts on Chinese society attracted significant attention (Feng et al, 2002). Although the number of migrants is still increasing, China faces a huge labor shortage problem, especially in the coastal areas where export industries are thriving (China Daily, March 14th, 2013). The labor shortage condition worsens as migrant workers stay at their home provinces (China Daily, Feb 19th, 2013). This brings a question: why do migrant workers choose to stay at their home province rather than return to coastal areas where incomes are higher?

It has been demonstrated that job satisfaction is a good predictor of labor mobility and labor turnover (see Freeman, 1977; Smyth et al, 2009). Freeman (1977) proved subjective expression of job satisfaction to be an economic variable. From then on, much research on the determinants of job satisfaction has been conducted by many scholars (e.g. Nielsen, Smyth, Clark, Lincoln, Knight, Kalleberg and Loscocco). China had a segregated labor market for more than 40 years, and the restrictions on labor mobility were released gradually from middle 1980s. Export industries constitute a large proportion of Chinese economic growth and migrant workers are a main part of this miracle. However, migrant workers have been neglected for a long time. Since China still has a huge migrant army in the labor market; it can be an especially interesting case to explore the job satisfaction and its determinants among Chinese rural-urban migrant workers.

1.1 Research question

When concerning rural-urban migrant workers, most people will refer to those workers who are working in the assembly lines or construction sites and are living in the

factory dormitories. It is definitely a biased opinion since the proportion of migrant workers working in manufacturing and constructions only account a bit more than 50% (NBS, 2006). In this sense, migrant workers who are working in the manufacturing or construction sectors should not be over-emphasized and those who are working in service, wholesales or retails sectors should not be ignored as well.

Though many scholars have analyzed job satisfaction in China, most of studies were confined to urban labors, specific sectors, limited number of cities or firms with particular ownerships. More precisely, Nielsen & Smyth (2008) and Gao & Smyth (2010) focused their attention on urban labor force. Leung et al (1996) showed their interest in the hotel sector and Shanfa et al (1998) analyzed job satisfaction in the steel sector. Loscocco & Bose (1998) did job satisfaction research in Tianjin while Donald & Siu (2001) did same research in 4 cities (Hangzhou, Panyu, Xiaolan and Zhanjiang). Leung et al (1996) emphasized workers' job satisfaction in joint ventures while Scott et al (2003) focused on the US invested enterprise. By far, few researchers paid attention to the job satisfaction of rural-urban migrant workers who are the essential material for the blooming Chinese economy. Smyth et al (2009) tried to explore the impact of gender differences on determinants of job satisfaction among migrants, but their survey was only conducted in a single manufacturing company located in Kunshan, Jiangsu.

Therefore, the aim of this thesis is to capture the determinants of job satisfaction among those rural-urban migrant workers who have already settled in cities in a national context. Since rural-urban migrant workers vote with their feet, in front of the urgent labor shortage, it is meaningful to do this research.

1.2 Data and methodology

In an effort to explore the determinants of job satisfaction among Chinese rural-to-urban migrant workers, a theoretical framework that discusses the job satisfaction in an economic perspective will be built. All variables in the model are selected based on the theoretical framework. As for the empirical part, ordinary least square (OLS) is employed to examine the determinants of job satisfaction while ordered logit model and instrument variable (IV) are used to do the robustness tests.

The data is taken from Chinese Household Income Project (CHIP) 2002 Rural-Urban Migrant Survey. CHIP (2002) belongs to Chinese Household Income Project series with an aim to measure and estimate the distribution of personal income and related economic factors in both urban and rural China. This project was a joint research effort sponsored by the Institute of Economics, Chinese Academy of Sciences, the Asian Development Bank and the Ford Foundation. In addition, this project received support from the East Asian Institute, Columbia University. The data was collected at the end of 2002 based on questionnaire interviews. In the Chinese Household Income Project series, the data of CHIP (2002) is the most recent. Further information about the dataset can be referred to CHIP (2002) bibliographic description (Li &Ann Arbor, 2009).

1.3 Limitations

The first possible limitation of this thesis is that the data source is relatively outdated and did not catch the time of labor shortage. One may argue that CHIP (2007) data is a better candidate. However, since the labor shortage was erupted after the economic crisis, therefore, there is no reason to believe that labor market had changed in 2007. Moreover, CHIP (2002) is currently the only published data that can be considered as a national representative of long-terms rural-to-urban migrants who can settle in urban China (Demurger et al, 2009).

The second possible shortcoming is that only a global/general measure of overall job satisfaction is used in this thesis. However, single-item measures of job satisfaction has shown to be extremely stable and reproducible (Staines & Quinn, 1979). Since job satisfaction is a function of personal and environmental interactions, the global measure may capture the variables that can not be measured by job satisfaction instruments (Scarpello et al, 1983). Nielsen & Smyth (2008) also pointed that the global measurement assumes that employees are able to balance out the different job characteristics to reach out an overall assessment of job satisfaction. Moreover, using the short-form Minnesota Satisfaction Questionnaire, Scarpello et al (1983) found that 1-5 global rating of job satisfaction is the most inclusive measure of overall job

satisfaction and may be more inclusive than the summation of many facet responses. As D'Addio et al (2003) stated: "the global measure avoids the problem of weighting individuals' perception of the relative importance of the various components in deriving a measure of job satisfaction."

The last general limitation, common for numerous studies of job satisfaction, is the inability to control for the unobserved determinant - personality - on job satisfaction. Mental health indicators (see Ferrer-i-Carbonell and Gowdy, 2007) or variables to measure the attitudes on social issues (e.g. Smyth et al, 2008) or personal views on the importance of family, friends and religion (see Knight et al, 2009) were used to control for the personality. However, none of these indicators accurately depict personality. According to Gao & Smyth (2011), controlling for personality using proxies such as the indicators above does not add value over not controlling for personality at all. In order to sufficiently control personality, one needs to design a personality-specific questionnaire or add such psychological questions to a general survey. In this thesis, I will not control personality because CHIP (2002) Rural-urban Migrant Survey did not contain proper psychological questions that can be used to measure personality. However, it will not be a major issue in this thesis since many previous studies have not found substantial effects.

1.4 Structure

The rest of this thesis will be organized as follows: section 2 gives an overview of Chinese rural-urban migrant workers' life conditions. Section 3 introduces the theoretical framework concerning job satisfaction and its determinants and hypotheses while section 4 describes the data, methodology and empirical strategy. Results and discussion are demonstrated in section 5. Section 6 presents robustness tests and a conclusion is drawn in section 7.

2. Overview of rural-urban migrant workers' life conditions

Rural-urban migrant workers or peasant workers refer to the labor population who register in the rural area but are engaged in non-agricultural work in urban area,

without first establishing the permanent urban residence (NBS, 2000; Zhang & Luo, 2013). Rural-urban migrant workers consist of the most vulnerable and under privilege group in urban cities. They suffer heavy discrimination and unfair treatment from their urban counterpart. The root of this divergence rests on the unique Chinese Household Registration System, i.e. *Hukou* system.

2.1 A rural-urban dual society

The *Hukou* system is a sword that divides one country into two societies. This system requires every citizen to be registered at birth place. A host of personal and family information are documented and verified to become a person's permanent *Hukou* record (Wang, 2005: pp. 23). The most important part of the *Hukou* record is the type of category that one belongs to, namely agricultural (rural) or nonagricultural (urban), which affects almost every aspect of one's life. Chinese household-based registration system has deep roots in the past that can be traced back to thousands years ago. However, the People's Republic of China (PRC) *Hukou* system is qualitatively different from the imperial *Hukou* system since it reaches "an unprecedented level of rigidity, effectiveness, and comprehensiveness in its role and capacity of division and exclusion" (Wang, 2005: pp. 22).

The PRC *hukou* system originated in 1950s and became a national system in 1958. It is worthy noticing that the initial purpose of establishing *hukou* system was not to forbid labor mobility but rather to "maintain the revolutionary order" (Sun, 1994: pp. 31). When PRC adopted a "*Tonggou Tongxiao*" policy (purchase and marketing under the state monopoly) in 1953 and guaranteed a food ration system for urban citizens at a fixed price, the hukou system played significant functions for state planning and resource allocation (Chen, 1983: pp. 209). These roles became even more important after the Great Leap Forward (1958-1961) since the food ration system served as a "life-saver" in a time of national famine (Wang, 2005: pp. 45). For three decades (1960s-1980s), people were allocated to work units in the cities or communities in the countryside according to their *hukou* records. Thus, the *hukou* system acquired principal roles in minimizing labor mobility and enlarging the gap between rural labor and urban

citizens economically, politically and socially.

2.2 Social exclusion of rural-urban migrant workers

China started the economic reform in 1978; because of the rural-urban migrant workers, the level of urbanization has been substantially improved. According to data from the National Bureau of Statistics (NBS), China's urban population has reached to 52.57% of total population by the end of 2012 (The Economic Times, 2013: Jan 18th). Statistically, the floating population that has lived in urban area for six months or longer is counted as the "permanent urban citizens". However, the status - permanent urban citizens - just appears in the statistics; in reality, rural-urban migrant workers do not receive the same treatment as urban citizens.

> "Simple and rigid, the PRC hukou system has been enforced stringently for five decades and serves as China's peculiar way of organizing its huge population through institutional dividing and excluding large segments of the people".

> (Wang, 2005: pp. 24)

In order to manage the employment and residence of rural migrants in urban cities, a permit system was established and rural-urban migrant workers need different kinds of official permits in terms of employment, health condition, residence and so on (Li & Chui, 2011). All permit cards charge fees. Local police stations and officials have abused their power and discriminated against the rural-urban migrants. They have charged excessive fees when migrant workers applied for official permits: "The charges not only covered administrative cost, but might also function as a form of revenue collection to benefit local governments or officials" (Knight et al, 1999; Li & Chui, 2011). Many migrant workers have tried to move to urban cities without obtaining official permits partly because they often cannot afford them and partly because they can not get enough documents to apply. However, a confinement and repatriation policy was imposed on rural-urban migrants from 1991. Migrant workers who were found to be without an official residence permit *(Hukou)* or a temporary living permit

(Zanzhuzheng) were sent back to their hometown. Many rural-urban migrant workers have frequently suffered from detection.

> "Yang Weidong, a rural-urban migrant worker worked in Shenzhen in 2002, hid together with his co-workers in a dark room. Police were cleaning migrant workers without urban temporary residence permits. They put down curtains and asked the neighbors to lock them inside so that police might think nobody was in. They heard knocking at the door in the afternoon and did not dare to let out noise. Their dog Yellow jumped out from under the bed and before it barked, they covered it with quilts. After the knocking ceased, they found the dog dead. It later proved to be their friends at the door."

> (Xinhua News Agency, 2008: Nov 2nd)

This experience was not unusual among rural-urban migrant workers. As citizens of People's Republic of China, rural-urban migrant workers live in the shadow of urban cities. The repatriation policy was not abolished until 2003 when Sun Zhigang, a graduate from Wuhan Textile University, was beat to death while waiting for deportation in Guangzhou police custody, for not having an identity card and a temporary living permit (South China Morning Post, May 14th, 2013). The sufferings of rural-urban migrant workers were finally exposure to public attention.

Not only do they suffer from institutional segregation, rural-urban migrant workers also endure hardships and persecutions from urban citizens. A survey administered by Chongqing Municipal Agricultural Bureau found that 92% of rural-urban migrants felt that local citizens distained them because of the type of work they do in the city (China Daily: Sep 24, 2005). For those who work as hotel porters, they are called "Bangbang" in Chongqing dialect, which is actually a derogatory term referring to the pole that a migrant porter uses to carry the urbanites' belongings (Guo & Smyth, 2011). The feeling of being despised by urban residents got confirmed by the migrant workers in Tianjin. "We get nasty abuse from the locals very often", "People in the city are not friendly to each other; they think they are superior to us", said by migrant workers (Li, 2006). Rural-to-urban migrant workers also allocate little time to

leisure activities. Jacka (2005) found that despite feelings of isolation and loneliness, migrant women in Beijing had little or no time for leisure activities. The dominate belief among them is that the urban citizens condemn them.

2.3 Descriptive statistics of rural-urban migrant workers' life conditions

Research has by and large documented the vast gap between rural-to-urban migrant workers and urban labors in terms of occupations, hours of working, income and social benefits. A survey administered by the All-China Federation of Trade Unions in 2006 found that 65% of rural-urban migrants were working in the so-called "Three-D jobs", namely dirty, dangerous and demeaning jobs (Tao, 2006). Li (2008) also pointed out that most jobs in the informal sectors were characterized by the four "Ds" - dirty, draining, dangerous and disgraceful - and were disliked by urban people. According to the Report of Rural-to-urban Migrant Workers (2011), in 2011, 36% of rural-urban migrant workers worked in the manufacturing sector and 17% of rural-urban migrant workers worked in the construction sector. The rest were all in service sectors (NBS, 2012)[1].

The International Labor Organization (2007) found that nearly twice as many migrants as urban residents worked six days per week, and almost 60% of migrants worked seven days per week in 2007. As demonstrated in the Report of Rural-urban Migrant Workers (2011), 42.4% of migrants worked more than 8 hours per day and 32.2% of migrants worked more than 10 hours per day. According to Li (2008), a survey conducted in Henan, Hunan and Sichuan provinces showed that hourly wage rates for migrant workers were about one quarter of that for local urban workers (Research Office Project Team, State Council, 2006).

In Shanghai, only 14% of rural migrant workers have health insurance and only 10% of them have any kinds of pension program, compared with 79% and 91% of local employees (Feng et al, 2002). In a national context, based on China's 1% census data collected in 2005, Gao & Smyth (2011) calculated that among the rural-urban migrants,

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[1] NBS (2012): Report of Rural-to-urban Migrant Workers in 2011. This report reflects the overall descriptive statistics of migrant workers in 2011 in a national context. Without specific notes, NBS (2012) in the rest of the paper is referred to the data in this report.

4.87% of them were participating in pension insurance, 5.2% of them were participating in social insurance and 4.76% of them were participating in unemployment insurance.

Lacking knowledge of their legal rights, rural-urban migrant workers have long been exposed to a great deal of exploitation. The report of Rural-Urban Migrant Workers (2011) shows that only 43.8% of rural-urban migrant workers signed the working contracts in 2011. Although the Labor Law (1995) aimed to protect a wide range of workers' rights such as minimum wage, overtime pay and insurance, the enforcement has been proved to be very inefficient. Thus, it is not surprising to find migrant workers, especially those working in the constructing sites, not receiving their wage after the due day. In 2003, even pre-premier Wen Jiabao personally intervened to help a migrant worker get her arrear wages (Xinhua News Agency: October 27th, 2003).

3. Job Satisfaction and its determinants: theory and hypotheses

It was until the 1930s that systematic attempts to study the nature and cause of job satisfaction began, although the importance of a worker's attitudes in determining his/her actions in job situations was recognized long before (Locke, 1976: p11). Locke (1976) defined job satisfaction as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experience" (Locke, 1976: p. 1300).

Putting job satisfaction into economic context, one can use standard economic model to measure job satisfaction by calculating the utility that one obtained from working. Individual utility from working depends positively on own income, y and negatively on hours of working, h. It also depends on a vector of individual characteristics, i and a set of job characteristics, j (see Clark & Osward, 1996; Clark, 1997). Thus the utility function is as follows:

$$U \text{ (job satisfaction)} = U (y, h, i, j, \varepsilon) \tag{1}$$

where ε is the random error term. It has long been suggested in existing literitures that one's satisfaction not only depends on his/her absolute well-being, but also partially determined by others' well-being (see e.g. Duesenberry, 1949). Veblen (1899) was one of the first proponents of such a view in economics. He coined the phase "conspicuous consumption" which refers to purchasing decisions that people make out of concern for

their social status (Veblen, 1899).

> "Goods are produced and consumed as a means to the fuller unfolding of human life and their utility consists, in the first instance, in their efficiency as a means to this end….But the human proclivity to emulation has seized upon the consumption of goods as a means to an invidious comparison, and has thereby invested consumable goods with a secondary utility as evidence of relative ability to pay."

> (Veblen, 1899, pp. 154-155)

Therefore, individuals' job satisfaction function should contain a reference group, r that indicates one's relative well-being.

$$U \text{ (job satisfaction)} = U (y, h, i, j, r, \varepsilon) \qquad (2)$$

However, comparison can take place in any components of the utility function, for example, income, hours of working, individual-specific characteristics and job-specific characteristics. Among them, income is often considered to be one of the most important aspects of jobs for the workers. Moreover, the level of others' income is more widely known and easier to measure than the stress of others' job or the type of others' job (Sloane & Williams, 1994). Thus, the utility function can be written as follows:

$$U \text{ (job satisfaction)} = U (y, h, y^*, i, j, \varepsilon) \qquad (3)$$

where y^* is a comparative level of income.

According to conventional economic theory, individuals' utility from working is positively associated with income and negatively associated with hours of working. A significant body of studies has confirmed that own income has a positive effect while hours of working have a negative effect on job satisfaction (see e.g. Clark, 1997; Nielsen & Smyth, 2008; Clark et al, 2009; Gao & Smyth, 2010). However, whether the conventional economic theory can explain the case of Chinese migrant workers is unknown, Therefore, I expect:

H1: Chinese rural-to-urban migrant workers' income is positively associated with their job satisfaction.

H2: Rural-urban migrant workers' hours of working are negatively associated with their job satisfaction.

Relative income is important for determining job satisfaction (Clark et al 2008). Clark & Oswald (1996) employed British panel data and found that an individual' job satisfaction is negatively correlated with the reference group income. A series of researches in US and Germany reached the same conclusion (see e.g. Blanchflower & Oswald, 2004; Ferrer-i-Carbonell, 2005). Smyth & Qian (2008) and Knight & Gunatdaka (2009a, b) reported that higher reference group income lowers life satisfaction in urban China. Cappelli & Sherer (1988) analyzed a case of approximately 600 employees working in a US airline and they found that an outside "market wage" is statistically significant and negatively correlated with pay satisfaction. The influence of relative income on people's job satisfaction stems from the comparison. This brings a question: what kind of comparison do people make? In the CHIP (2002) rural household survey, rural citizens were asked about with whom they made comparison. The most frequent answer was neighbors or people in the home village. Since migrant workers have been living in urban cities, their reference group might change from people in the home village to urban citizens. It will be extremely interesting to check the effect of income comparison with urban citizen on migrant workers' job satisfaction. However, the absent information on the urban citizens' income requires further research based on a better dataset.

Duesenberry (1949) found that own previous income or consumption can be a good indicator of reference income. Knight & Gunatdaka (2010) found that the happiness function of rural-urban migrant workers is positively correlated to the expectation of future income. Gao & Smyth (2011) also analyzed the relationship between the expectations of future income with the happiness level among migrant workers in China. Their findings show that many migrant workers who expect to have a higher income in the future have a higher level of happiness. Therefore, I expect:

H3a: The higher the previous yearly income, the lower the migrant workers'

current job satisfaction.

H3b: The higher the expected wage in home village, the lower the migrant workers' current job satisfaction.

H3c: The expectation of income in the future is positively correlated with currently job satisfaction.

Chinese household registration system (i.e. *Hukou* system) plays an extremely efficient role on separating migrant workers from urban citizens and poor provinces from rich provinces. According to the statistics from NBS (2011), over half of the migrant population is from Central and Western regions and migrant workers are concentrating in big cities. Since all the migrant workers are still confined by the *Hukou* system, it is very interesting to explore whether there is geographical relations on the migrant workers' job satisfaction. Living in the shadow of urban cities, migrant workers depend heavily on their social ties to maintain connections with the society. Through the social networks, not only can migrant workers gain access to resources such as job, housing and finances (Zhang, 2001a), but also they can get emotional support from relatives, friends and acquaintances in the cities (Li et al, 2006; Jin et al, 2012). People from the same province have strong commitments and are more willing to support each other. Having friends in resident cities can also help to reduce working stress. Existing literatures show a positive effect of social ties on mental health (Cohen & Wills, 1985; Bhugra, 2004; Jin et al, 2012). This brings to three puzzles: first, are migrant workers more satisfied with their jobs when they are working in the origin provinces? Second, to what extent can geographical distance between home provinces and destination provinces influence migrant workers' job satisfaction? Third, does having many friends in resident cities help to increase the job satisfaction of migrant workers who come from far away? In order to address these puzzles, I expect:

H4a: Migrant workers are more satisfied with their job if working in the origin provinces.

H4b: The greater geographical distance between the origin province and the

destination province is; the lower job satisfaction is expressed by a migrant worker.

H4c: Having many friends can help to increase the job satisfaction of a migrant worker whose origin province is far away from the resident province.

That male and female have different expressions towards job satisfaction is hardly controversial. A number of studies have reported that women have higher job satisfaction than men. Lincoln & Kalleberg (1990) collected data from Kanagawa prefecture in Japan and central Indiana in US to analyze the work organization and work attitudes. They found that women were more satisfied with their job than men in Japan. Crosby (1982) reported that there is no evidence that women are more dissatisfied with their wages than men and she attributed the pattern of women being subjectively satisfied with their wage while objectively underpayment as "the paradox of the contented female workers". Ferree (1976) found that women in US with a full-time job outside are happier and feel themselves to be better off than the full-time housewives, despite the strains of carrying a double role. Clark (1997) examined the reason why women are happier and more satisfied with their job. It is that women care more about the intrinsic returns to work (job itself) while men are more likely to value the extrinsic aspects such as wages, and women have lower career entry and payment expectation than men (see e.g. Clark,1997; Major & Konar,1984). Thus I expect:

H5a: Women have higher job satisfaction than men among Chinese rural-urban migrant workers.

Older employees tend to report higher job satisfaction in both western countries and China (Mottaz, 1987; Warr, 1992; Linz, 2004; Hui & Tan, 1996). According to Mottaz (1987), older workers are more likely to build up considerable seniority and work experience than younger employees and these factors allow them to get satisfying jobs much more easily. By contrast, young employees have high expectation of their job and emphasize more on the job itself than the extrinsic aspects; it would be more common to see that young employees express lower job satisfaction. Clark et al (1996) analyzed the relationship between job satisfaction and age by using

the data from British Household Panel Study and he found that job satisfaction is U-shaped in age. More precisely, employees' job satisfaction first decreases and then increases with the increasing of their age. Nielsen & Smyth (2008) found that age has a positive effect on job satisfaction among China's urban workforce. Unlike urban labor force, migrant workers do not enjoy the same social welfare. At the beginning of working in urban cities, migrant workers may have high job satisfaction because of obtaining jobs in cities. However, when migrant workers work for a certain time, their job satisfaction may become lower due to institutional discrimination (e.g. temporary residence permits; children's education problem). When migrant workers become old, their job satisfaction level may rise again. This is not only because they expect less, but also because their children have grown up. Therefore, I expect:

H5b: Chinese rural-urban migrant workers' job satisfaction is U-shaped in age.

Previous studies using data from Japan and Taiwan have found a negative correlation between job satisfaction and educational attainment (see e.g. Hodson, 1989; Chuang et al, 1990). In Warr (1992), education entered negatively and statistically significant both with and without a large set of control variables by using the sample from UK. Clark & Oswald (1996) reported that satisfaction levels are shown to be strongly declining in the level of education when holding income constant. Neilsen & Smyth (2008) examined job satisfaction and the incentive structures among Chinese urban labor force, and they found that comparing with those who obtained a four-year higher degree, workers whose highest educational level were junior or senior middle school expressed higher job satisfaction. All of the previous studies supported the "paradox of education" which refers to a notion that educated workers have lower job satisfaction. However, comparing those with a highest educational achievement of elementary schooling with those who completed lower middle school, the latter group has an advantage to obtain jobs as they are more educated. While comparing with those who finished upper middle school or above, migrant workers with lower middle schooling education require less wages. Therefore, I expect:

H5c: Chinese migrant workers' job satisfaction is inverted U-shaped in the educational levels.

That marital status influences the job satisfaction has little support in western countries (see e.g. Loscocco, 1990; De Vaus & McAllister, 1991). However, Su & Huang (1992) found that married individuals have higher job satisfaction in Taiwan. Therefore, I expect:

H5d: Chinese migrant workers who are being married have higher job satisfaction.

Saenger & Gordon (1950) found that job satisfaction was lower among minority-group people. Pettigrew & Martin (1987) provided an extensive review of existing literature, mainly American studies: employees from ethnic minorities are confronted with several problems during the first stage of their employment and their evaluation of job satisfaction. Verkuyten et al (1993) stressed that employees from ethnic minorities are only slightly less satisfied with their job in the Netherlands. Therefore, I expect:

H5e: Chinese migrant workers who belong to minority-groups have lower job satisfaction.

Migrant workers can adjust to the urban life in many ways. The year of duration in urban cities can influence migrant workers' job satisfaction. On one hand, at the beginning of settling, migrant workers overcome many difficulties and hardships such as getting the temporary residence permit. However, they may earn more salary than before which might give rise to their job satisfaction. On the other hand, when they stay longer in cities, they broad their horizon and might start to compare their life with urban citizens rather than the people in home villages. This fall in comparison status may decrease their subjective evaluation of job satisfaction. Therefore, I expect:

H5f: At certain year of duration in urban cities, Chinese rural-urban migrant

workers' job satisfaction would reach to the peak.

It has been proved that facet-specific working dimensions have significant effects on overall job satisfaction (see Gao & Smyth, 2010). Due to the long period of institutional segregation, migrant workers have experienced severe discrimination in a wide range of aspects. Migrant workers were asked whether enjoy the same treatment as urban workers in CHIP (2002) Rural-urban Migrant Household Survey. And eight different dimensions of working situation such as payment, type of work and promotion were included. Therefore, I expect:

H6: The more severe discrimination a migrant worker received, the lower his job satisfaction is reported.

All hypotheses above are applied to address five questions. First, do variables such as income and hours of working explained by economic theory behave as expected? Second, does the reference concept fit the case of rural-urban migrant workers' job satisfaction? Third, do the geographic and friendship effects on migrant workers' job satisfaction exist? Fourth, do all the variables related to individual characteristics have an independent effect on migrant workers' job satisfaction? Fifth, to what circumstance does the subjective evaluation on discrimination influence migrant workers' job satisfaction? The answers to these questions will be interconnected to the important issues in Chinese society. One: what are the determinants of settled rural-urban migrant workers' job satisfaction? Two: does this analysis carry policy implications especially that China is now facing a great labor shortage?

4. Data, method and description of variables

The data used in this thesis comes from Chinese Household Income Project (CHIP) 2002, which was a joint research effort sponsored by the Institute of Economics, Chinese Academy of Sciences, the Asian Development Bank and the Ford Foundation (Li & Ann Arbor, 2009). CHIP (2002) is aimed to explore the household income and inequality in China and the survey consists of three main parts, namely, urban

household survey, rural household survey and rural-urban migrant household survey. The rural household survey covered 22[2] out of 31 provinces in mainland China and the size of rural household sample was 9,200. However, both urban household samples and rural-to-urban migrant household samples were taken from 12[3] provinces, with 7,000 and 2,000 respectively. Since migrant workers are concentrated in big cities, all of the capital cities and one or two medium-sized cities in each selected province were chosen for migrant household survey (Li, 2008). Figure 1 shows the overall graphical distribution of CHIP (2002) survey.

Figure 1: The graphical distribution of CHIP (2002) survey[4]
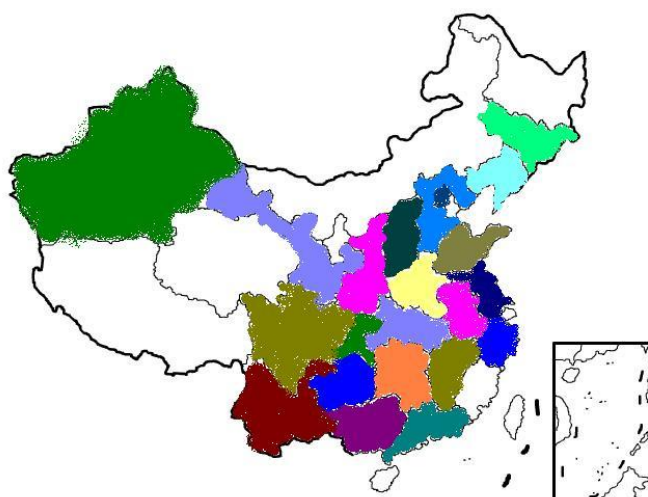
Source: data based on CHIP (2002) survey.

According to Li (2008), the principle for sample distribution among provinces were as follows: 200 households were selected from the provinces in the coastal or interior regions; 150 households were selected from the provinces in the western; as for the migrant household survey, 100 household samples were selected from provincial capital cities and 50 household samples were selected from other cities in each selected province. It is worthy noticing that the samples of rural-urban migrant household were selected from resident committees. Therefore, migrant workers who lived in construction sites or factory dorms were not included due to sample selection. In other words, this data is under-represented of migrant workers working in the sectors such as

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[2] Beijing, Hebei, Shanxi, Liaoning, Jilin, Jiangsu, Zhejiang, Anhui, Jiangxi, Shandong, Henan, Hubei, Hunan, Guangdong, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Xinjiang.

[3] Beijing, Shanxi, Liaoning, Jiangsu, Anhui, Henan, Hubei, Guangdong, Chongqing, Sichuan, Yunnan, Gansu

[4] The colors in this figure are used to identify the border of different provinces.

construction or manufacturing. As discussed before, the aim of this thesis is to explore the job satisfaction of settled migrant workers; therefore, this type of under-representation is not a major issue in this case. Figure 2 displays the geographical distribution of CHIP (2002) rural-urban migrant household survey.

Figure 2: The province distribution of CHIP (2002) Rural-urban migrants' survey[5]
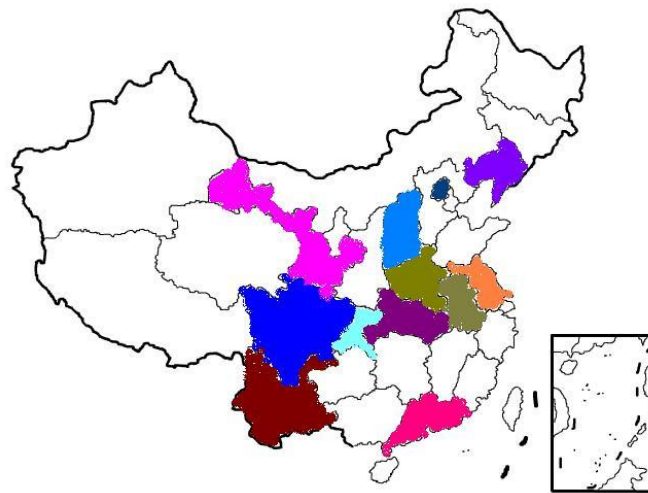
Source: data based on CHIP (2002) survey.

In this thesis, only the data related to rural-urban migrant workers is used. There are 2000 migrant households and 5327 individuals in CHIP (2002) rural-urban migrant household survey. CHIP (2002) has 10 datasets and dataset No. 9 contains 76 variables and 5327 samples (i.e. individual rural-urban household members) and No. 10 contains 129 variables and 2000 samples (i.e. rural-to-urban migrant households) (Li & Ann Arbor, 2009). The main question "How satisfied are you with your present job?" belonged to the attitudinal questions in the household survey and was answered by the head of household or a main member. However, virtually all the personal information such as age, gender, occupation is in the individual dataset. In order to explore the determinants of migrant workers' job satisfaction, these two datasets must be merged. In these two datasets, the only possibility to merge is using the code of the member. Therefore, all of the samples in the individual dataset which do not have the same code of member as the ones in the household dataset were deleted. The newly merged dataset

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[5] The colors in this figure are used to identify the border of different provinces.

contains 205 variables and 1997[6] cases.

4.1 Descriptive statistics of rural-urban migrant workers in CHIP (2002)

China has very obvious regional differences in terms of both economic and social development. Containing 11 provinces along the coastal area, the Eastern region is the most developed region of China with the highest GDP growth rate, highest personal income level and highly developed public service, followed by the central region and western region[7]. The income gaps among East, Central and West are substantial. For instance, according to the China yearly provincial macro-economy statistics, Tianjin has the highest per capita GDP 93, 110 Yuan, which is 3.2 times higher than that of Anhui, the poorest province in the Central region and 4.7 times higher than that of Guizhou, the poorest province in China (China Data Online, 2013).

Since migrant workers vote with their feet, the labor mobility between rural area and urban area can be ascribed to the imbalance of economic and social development of different regions. In this sense, it is worthy looking at the regional differences among rural-urban migrant workers. Figure 3 shows the comparison of regional distribution of rural-urban migrant workers by origin in 2002 and 2011.

Figure 3: Distribution of rural-urban migrant workers by origin (2002 & 2011)
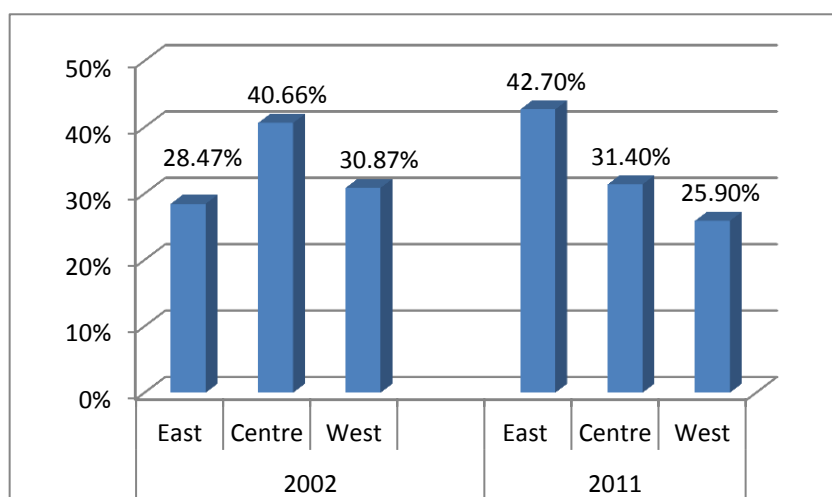
Source: CHIP (2002), NBS (2012).

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[6] Three samples in the household dataset are deleted because their code of member can not be found in the individual dataset.

[7] East (11): Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Shandong, Fujian, Guangdong, Hainan.
 Centre (8): Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan.
 West (12): Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai,
   Ningxia, Xinjiang.

The data from CHIP (2002) rural-urban migrant household survey shows that the majority of migrant workers came from Central and West part of China which is somewhat constant with the situation of 2011. Although East region is much more developed than Center and West, there were 28.47% of rural-urban migrants in the samples of CHIP (2002) survey and it has increased to 42.70% in 2011, according to the statistics offered by National Bureau of Statistics (NBS) of China. This result is in line with Li (2008)'s conclusion that the rural-urban migration is a national phenomenon in China.

Figure 4 presents the pattern of rural-urban migrant workers by the region of destination. It is somewhat strange that the regional distribution of migrants by destination in 2002 is approximately equal among different regions. This is likely caused by the sample selection process of CHIP (2002) survey. More precisely, four provinces from each region were selected for the rural-urban household survey. Since the CHIP (2002) sample is under-represented of migrant workers working in the sectors such as construction and manufacturing, and these groups of migrants were concentrated in coastal provinces, it is not surprising that the proportion of migrants in East region was much smaller in comparison with the situation of 2011.

According to NBS (2006), absorbing approximately 70% of migrant workers in 2004, the East region was the largest destination for rural-urban migrant workers. In 2011, the East region remained the largest destination, followed by Center and West with slight differences.

Figure 4: Regional distribution of rural-urban migrants by destination (2002 & 2011)
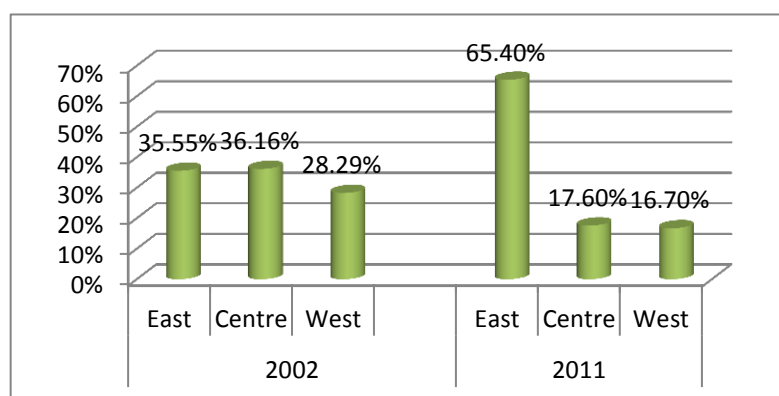
Source: CHIP (2002), NBS (2012).

When concerning the gender description of rural-urban migrant workers (see Table 1), there are no big differences between 2002 and 2011. That over 60% of rural-urban migrant workers were male reflects the discrimination of women on one hand and gender division of labor in a household on the other. Specifically, in the CHIP (2002) data (the merged one), only the head of the household or a main member answered the attitudinal question regarding the job satisfaction. Due to the Chinese culture, the husband is the head of a household; therefore, it is not unusual that the proportion of male was larger than that of female. Females in households carry more responsibility of taking care of children and parents. Li (2008) did a fieldwork in Sichuan and found that "taking care of children and sick parents" was the most frequent answer of the question why wives had come back home rather than stayed with their husbands in cities.

Table 1: Gender distribution of rural-urban migrant workers (2002 & 2011)

Gender Year	2002	2011
Male (%)	60.3%	65.9%
Female (%)	39.7%	34.1%

Source: CHIP (2002), NBS (2012).

As for the age, Figure 5a displays the rural-urban migrant workers' age distribution in 2002. The majority of the rural-urban migrants were between 25 and 40.

Figure 5a: Distribution of rural-urban migrant workers by age (2002)
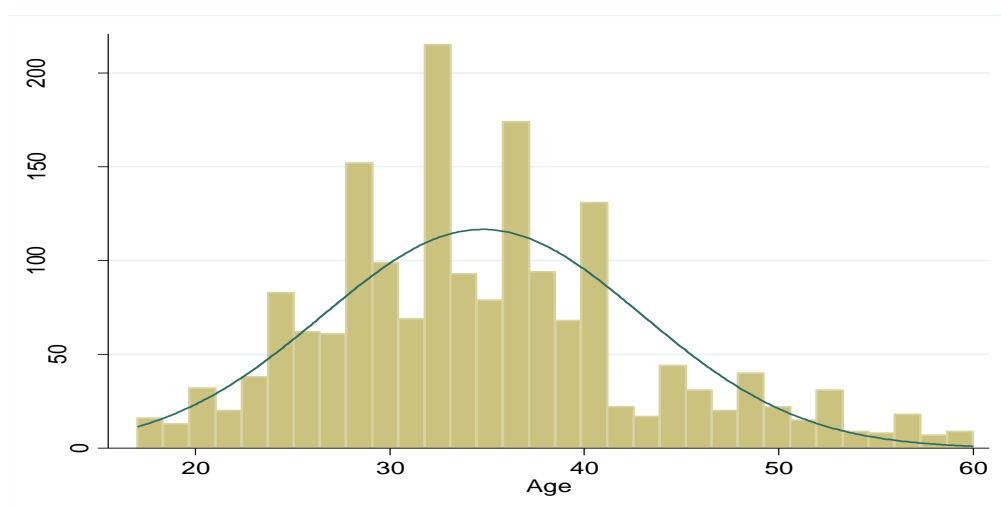
Source: CHIP (2002).

Figure 5b and 5c clearly show the comparison of the age profile of rural-urban migrant workers between 2002 and 2011. Approximately half of the samples in the merged dataset (CHIP, 2002) belonged to the age group of 31 to 40 and about 30% of the migrant workers were at the age of 21 to 30. Since the samples were taken from the resident committees, the data of 2002 was over-represented of settled migrant workers at the age between 21 and 40. Compared to the age distribution in 2002, the age distribution in 2011 was more equal among different age groups.

Figure 5b: Age break-down of rural-urban migrant workers (2002)
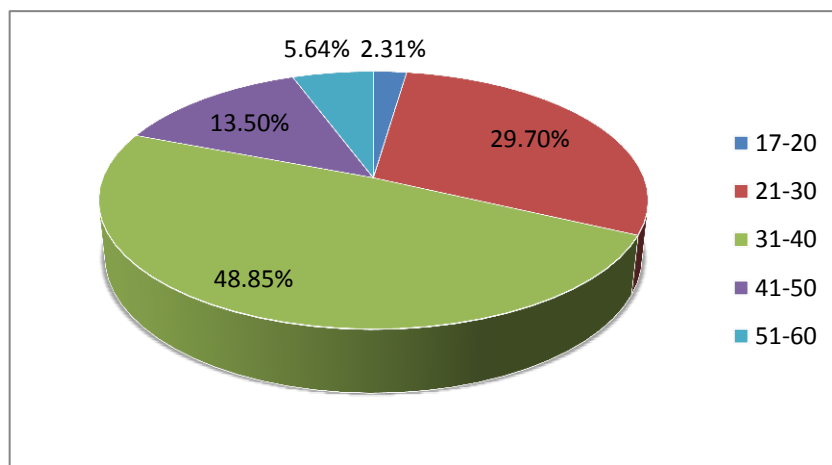
Source: CHIP (2002).

Figure 5c: Age break-down of rural-urban migrant workers (2011)
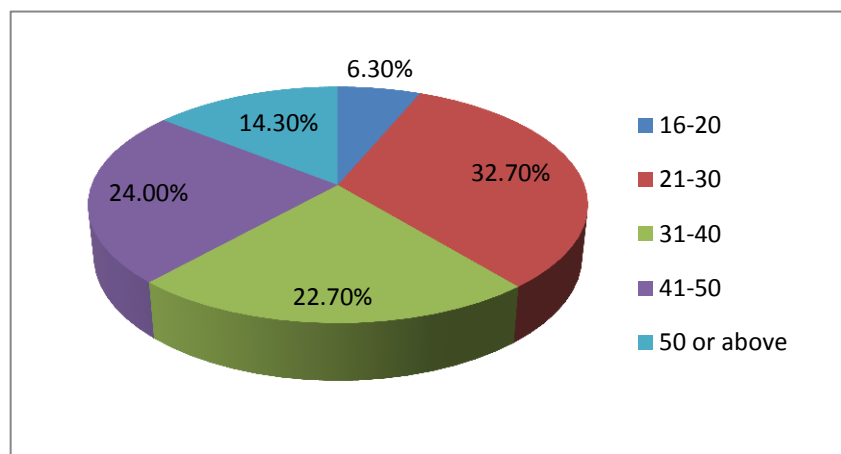
Source: NBS (2012).

The CHIP (2002) data indicates that 48.94% of settled rural-urban migrant workers finished the lower middle school and about 20% of settled rural-urban migrant workers finished upper middle school or above. Therefore, approximately 70% of

rural-urban migrant workers that have settled in urban cities finished nine years of compulsory education. In 2011, the proportion of migrants finishing nine years of compulsory education has reached to nearly 85%. However, the majority of rural-urban migrant workers' education level remained lower middle school, indicating most of them are unskilled labor.

Figure 6: Distribution of rural-urban migrant workers by educational level (2002 & 2011)
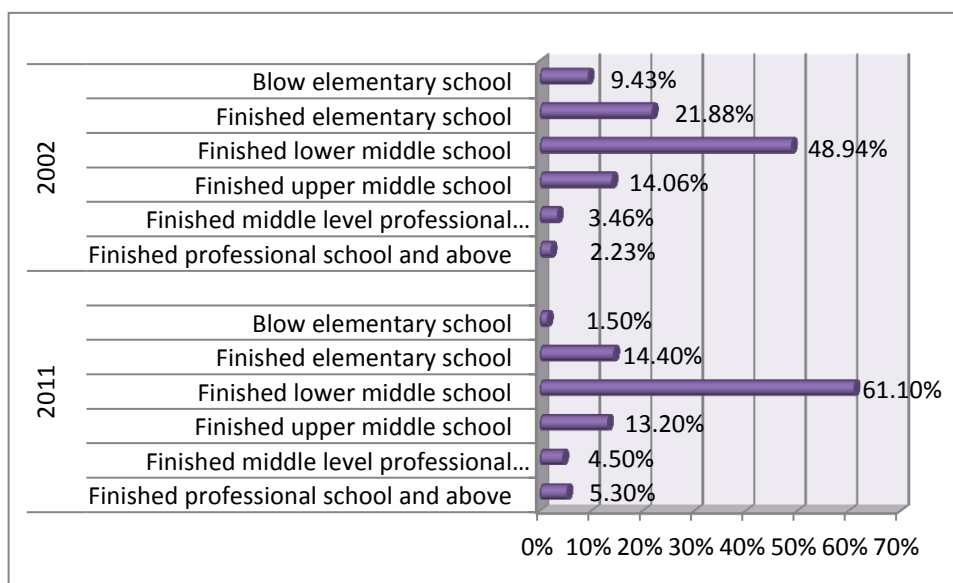
Source: CHIP (2002), NBS (2012).

Figure 7 presents the occupations that settled rural-urban migrant workers had in 2002. Over 50% of them were owner of private firm or self-employed, followed by the service worker, commercial worker, professional or technician and so on. As mentioned above, the CHIP (2002) rural-urban migrant household samples were collected from resident committees and migrant workers who lived in construction sites or manufacturing factory dorms were not in this sample pool. Therefore, the traditional popular occupations such as construction workers and manufacturing workers are not outstanding in this case. Since the educational level of rural-urban migrant workers were low and they were unskilled labor in general, it is understandable that over half of them who had settled were self-employed.

Figure 7: Distribution of rural-urban migrant workers by occupations (2002)
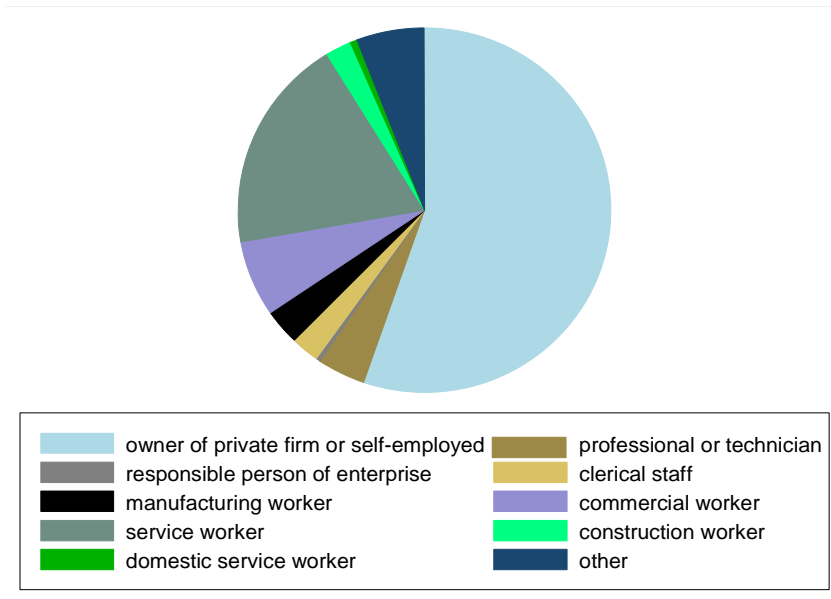
Source: CHIP (2002).

In the data of CHIP (2002) (see Figure 8a), 46.71% settled rural-urban migrant workers worked in wholesale, retail and food services while 22.42% of them worked in social service. Only 12.61% of migrants worked in the construction and manufacturing sectors. By contrast, the sector distribution of rural-urban migrant workers in 2011 (see Figure 8b) displays that 53.7% of migrant workers worked in the construction sector or manufacturing sector. .

Figure 8a: Distribution of rural-urban migrant workers by sectors (2002)
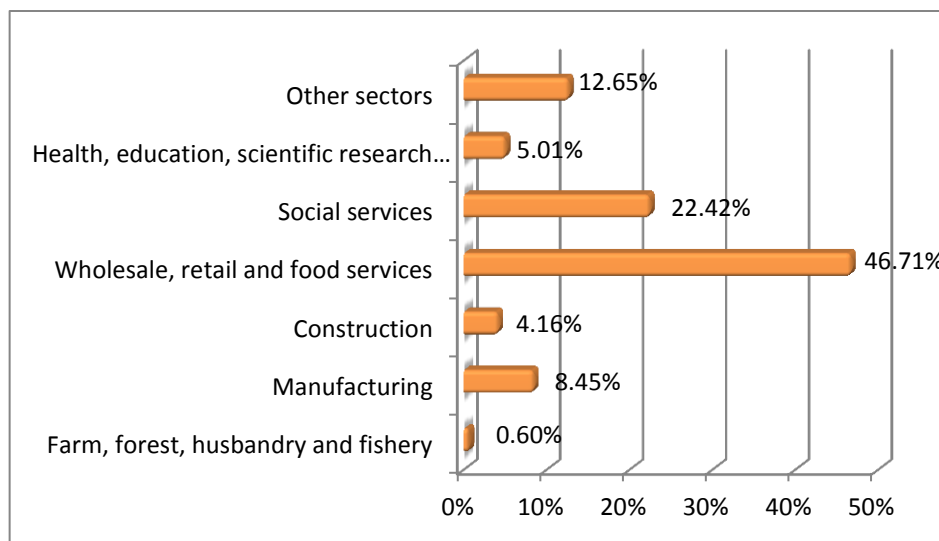
Source: CHIP (2002).

Figure 8b: Distribution of rural-urban migrant workers by sectors (2011)
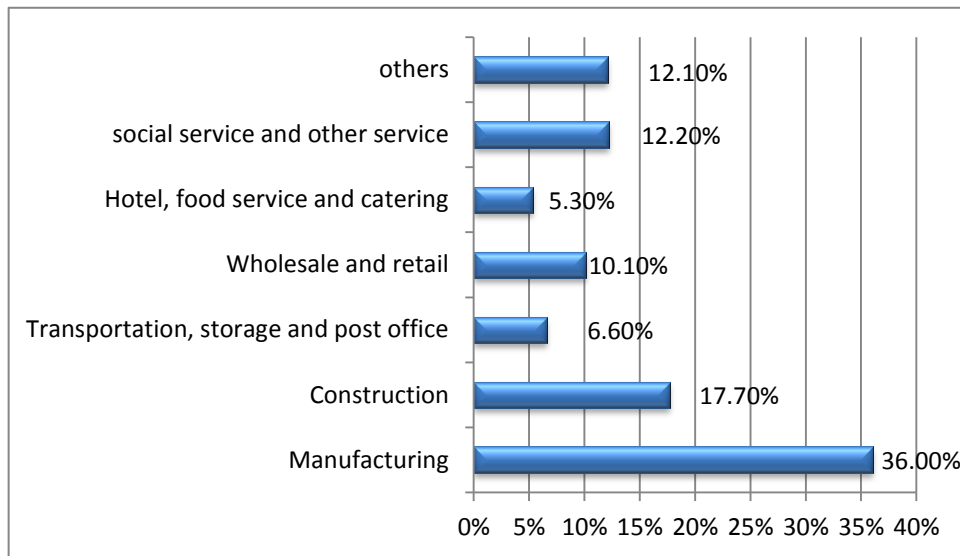
Source: NBS (2012).

When concerning the hours of working of migrant workers, one can easily connect to the image of over-worked labor. Table 2 demonstrates that the average hours of working per day of settled migrant worker was 10.4 hours in 2002 while it was 8.8 hours among rural-urban migrant workers in 2011. Except the proportion of working more than 8 hours per day has substantial improvement, both the number of working days per week and working hours per week were very high in 2002 and 2011. This indicates that in the past 10 years, although there was some improvement, rural-urban migrant workers remain working for a long period.

Table 2: Basic information of rural-urban migrant workers' hours of working (2002 &2011)

	2002	2011
Average hours of working/day	10.4	8.8
Work more than 5 days/week (%)	92.0%	83.5%
Work more than 8 hours/day (%)	72.5%	42.4%
Work more than 44 hours/week (%)	89.8%	84.5%

Source: CHIP (2002), NBS (2012).

4.2 Methodology specification

Ferrer-i-Carbonell & Frijters (2004) analyzed the importance of methodology for estimating the determinants of happiness. Just the same as job satisfaction,

happiness is a subjective expression. As Ferrer-i-Carbonell and Frijters summarized, psychologists and sociologists interpret happiness scores as cardinal and comparable across respondents and thus they prefer to use OLS regression to analyze the determinants of happiness. However, most of economists agree that the subjective variable is ordinal and thus mainly use ordered latent model to analyze. Based on different assumptions, psychologists and economists use different methodologies to test and estimate the determinants of happiness. Then how important is the methodology used to analyze the subjective variables? By developing a fixed effect ordered logit model, Ferrer-i-Carbonell and Frijters (2004) found that "assuming cardinality or ordinarily of happiness scores makes little difference". Further, they found that "assuming cardinality or ordinarily of the answers to general satisfaction questions is relatively unimportant to results".

Following Ferrer-i-Carbonell and Frijters (2004)'s conclusion, I decide to use OLS regression to analyze the determinants of rural-to-urban migrant workers' job satisfaction and present latent variable models and instrument variables as robustness tests. Gao & Smyth (2011) used the same strategy to estimate happiness among Chinese rural-to-urban migrant workers.

4.3 Dependent variable: job satisfaction

Job satisfaction can take many forms and a number of measures can be used as an indicator. In the area of Psychology, the "facet-specific" approach is widely used to measure job satisfaction. More specifically, it is measured as a weight average of several aspects such as pay, promotion, supervision, fringe benefits, co-workers and nature of work. Rose (2005) argued that this approach captured both the intrinsic and extrinsic aspects of a job. However, a global measure of job satisfaction – a single question to evaluate the overall job satisfaction - is more common in the studies of economics. Further information about the comparison between these two approaches can be found in Nielsen & Smyth (2008) and D'Addio et al (2003). In this thesis, I employ the global measure of job satisfaction.

In the CHIP 2002 survey, rural to urban migrant workers were asked "how

satisfied are you with your current job (C505)". Figure 9 illustrates responses of the global measure of job satisfaction.

Figure.9 How satisfied is you with your current job? (C505)
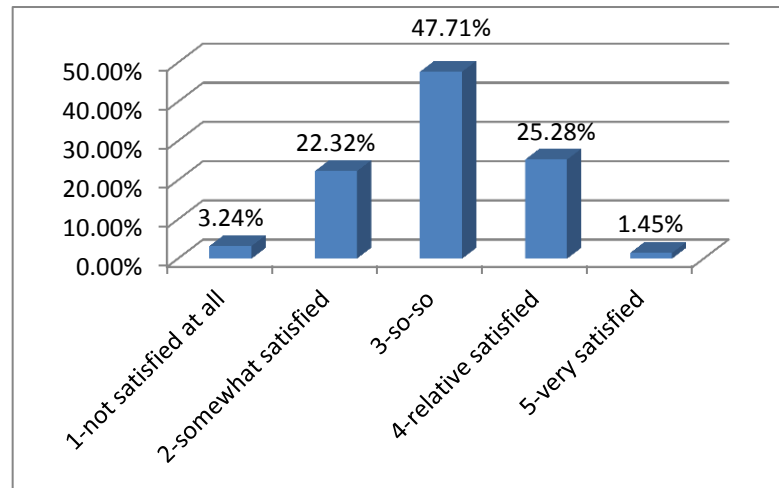
Source: CHIP (2002) Rural-urban Migrant Household Survey.

As showed in figure 9, 26.73% of respondents expressed at least relative satisfied with their jobs and approximately 25.56% indicated at least somewhat unsatisfied with their jobs.

4.4 Independent variables

The key interest of this thesis is to find the determinants of job satisfaction among Chinese rural-to-urban migrant workers. According to the conventional economic theory, income and hours of working should be considered. As the head of household or a main member, when evaluating their job satisfaction, they are more likely to evaluate it in a household context rather than in a personal context. Therefore, instead of using personal monthly income, per capita household income will be a better candidate. Knight & Gunatilaka (2010) used CHIP (2002) data to analyze the subjective well-being among rural-urban migrant workers and they used per capital household income as a measurement of income since the happiness question were also answered by the head of household or a main member. Thus, per capita household income will be entered as a logged variable in the regression. When concerning hours of working, the number of working hours per day and a dummy variable capturing six or seven workdays per week are included in the regression.

Previous income and expected income are served as the income reference groups. As such, both previous yearly income just before left home village (P144) and expected income if still stayed at home village (P145), will be employed as logged variables. Migrant workers were also asked to expect income in next 5 years and the answer varied from 1-big increase to 4-decrease. This will give an indication of how rural-to-urban migrant workers evaluate their current situation, as the expectation for the future is usually based on current situations. Therefore, the expectation of future income will be entered as three dummy variables, namely big increase, small increase and unchanged in the regression (the category decrease omitted as a reference category).

In an effort to capture the geographic and friendship effects on migrant workers' job satisfaction, working in the origin province will enter as a dummy variable where dummy=1 if yes. Additionally, five regional dummies (Northern, East, Central-south, South-western and North-western) based on the origin of migrant workers will be entered in the regression to check the geographical effect on job satisfaction (Northeast will be treated as the omitted variable). The number of friends and acquaintances that migrant workers have in the city is divided in to three categories to examine the friendship effect: no friends; some friends (1-10) and many friends (11 or more). Among them, no friends will be the omitted category.

The fourth set of independent variables is to capture some other elements of individual characteristics that influence job satisfaction and it includes gender, age, educational level, marital status and so on. Male is a dummy variable where male=1 if yes. In an effort to test whether job satisfaction is U-shaped in age, I decompose the age (calculated by years) into four categories, namely 17-29, 30-39, 40-49 and 50-60. According to previous studies (see e.g. Clark et al, 1996), people at the age category of (30-39) have lower job satisfaction than other categories. As such, the category of (30-39) will be treated as an omitted category. To test the effect of education, I divide the educational level into five categories based on the highest educational qualification, and the middle level - lower middle school - will be omitted as a reference. Marital status and ethnicity will be served as dummy variables where dummy=1 if being married or belonging to ethnic groups. Years of staying in the city will be a continuous

term in the regression while a square term of years of staying will be used to capture a non-linear effect.

The last independent variable is aimed at checking the effect of subjective evaluation of being discriminated against on migrant workers' job satisfaction. In the CHIP (2002) rural-urban migrant household survey, migrant workers were asked "Do you think rural workers are enjoying the same treatment as urban workers? (C508)". This question contained eight aspects: equal pay for equal work, type of work, working hours, promotion, housing provision, social securities, other benefits and income in-kind. The answer was 1-yes or 2-no. To avoid too many dummy variables and to capture the overall evaluation, I construct an index of subjective evaluation of being discriminated against based on the answers of eight aspects mentioned above. The mean of this index is 1.7650.

4.5 Control variables

Beyond the key independent variables, a number of other variables such as job-specific characteristics may influence rural-to-urban migrant workers' job satisfaction. Therefore, ownerships of work units, employment characteristics, occupation categories, sectors of work units and benefit from work units are controlled. As variables such as ownership, employment characteristics, occupations and sectors are categorical, dummy variables are therefore constructed for each category, with one category omitted as the reference category for each variable. The ownership of work units includes state-owned enterprises (SOEs) or collective enterprises, urban private firms, urban self-employed, FIEs (including Sino-foreign joint venture and foreign company), share-holding company (including both state share-holding company and other share-holding company), the residual category "other" including e.g. rural private enterprises. Dummy variables are constructed for each category of employment characteristics and occupations. As for the sectors, seven dummy variables are constructed. Benefit from work units includes four dummy variables, namely pension, medical insurance, housing and unemployment insurance. In this thesis, SOEs or collective enterprises is the work unit ownership reference; self-employed is the

employment characteristic reference; owner of private firm or self-employed is the occupation reference and wholesale, retail and food services is the sector reference. The descriptive statistics of all variables are presented in the Appendix 1.

5. Results and discussion

Following the methodology that has been discussed before, I use multiple regressions to test the hypotheses. The results of OLS-estimation are displayed in table 3. Before discussing the results of the OLS estimation further, a note on diagnostic check is needed.

Table 3: OLS regression results (dependent variable is job satisfaction)[8]

| | Job satisfaction | |
Independent variables	Model 1	Model 2
Conventional economic variables		
Log of per capita household income 2002	-0.0122	-0.0152
	(0.0339)	(0.0338)
Six/seven days of working/week	0.135*	0.142*
	(0.0812)	(0.0812)
Hours of working/day	-0.00232	-0.00265
	(0.00895)	(0.00899)
Reference income		
Log of previous yearly income	-0.0283	-0.0241
	(0.0329)	(0.0327)
Log of expected income in home village	0.0218	0.0184
	(0.0349)	(0.0348)
Big increase (expected income in 5 years)	0.393***	0.382***
	(0.122)	(0.123)
Small increase (expected income in 5 years)	0.277***	0.274***
	(0.0764)	(0.0771)
Unchanged (expected income in 5 years)	0.267***	0.268***
	(0.0783)	(0.0789)
Geographic & friendship effect		
Working in origin provinces (dummy=1 if yes)	0.0424	0.0408
	(0.0485)	(0.0485)
Northern	0.0279	0.0304
	(0.125)	(0.125)
East	0.00489	0.00582
	(0.0917)	(0.0915)
Central southern	-0.0749	-0.0951

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[8] Full regression results can be found in Appendix 2.

	(0.0891)	(0.0905)
South western	-0.0174	0.00452
	(0.0939)	(0.0951)
North western	-0.164	-0.211*
	(0.118)	(0.123)
Some friends	-0.0273	------
	(0.134)	------
Many friends	0.0204	------
	(0.145)	------
Central southern & many friends	------	0.163*
	------	(0.0986)
South western & many friends	------	-0.135
	------	(0.134)
North western & many friends	------	0.390*
	-------	(0.234)
Individual characteristics		
Male (dummy=1 if yes)	-0.0453	-0.0403
	(0.0476)	(0.0477)
Age (17-29)	-0.00394	-0.000849
	(0.0570)	(0.0569)
Age (40-49)	0.0449	0.0391
	(0.0599)	(0.0597)
Age (50-60))	0.0987	0.0941
	(0.0943)	(0.0941)
Middle level professional school and above	-0.232*	-0.236**
	(0.119)	(0.117)
Upper middle school	-0.115*	-0.117*
	(0.0612)	(0.0609)
Elementary school	-0.115**	-0.118**
	(0.0580)	(0.0580)
Below elementary school	-0.199**	-0.200**
	(0.0822)	(0.0821)
Ethnic (dummy=1 if yes)	-0.112	-0.111
	(0.0850)	(0.0846)
Married (dummy=1 if yes)	0.0465	0.0467
	(0.0932)	(0.0934)
Years of stay in the city	0.0106	0.0106
	(0.0138)	(0.0137)
(Year of stay in the city)^2	-0.000625	-0.000626
	(0.000654)	(0.000648)
Subjective evaluation of being discriminated		
Index of discrimination	-0.201***	-0.212***
	(0.0758)	(0.0756)
Control variables		

Ownership		
Share holding company	0.342**	0.338**
	(0.145)	(0.144)
Other ownerships	Controlled	Controlled
Employment characteristics	Controlled	Controlled
Occupations	Controlled	Controlled
Sectors of work unit		
Social services	0.154***	0.151**
	(0.0585)	(0.0588)
Health, education, scientific research, government agents	0.314***	0.310***
	(0.115)	(0.115)
Others sectors	Controlled	Controlled
Benefits from work units		
Pension fund (dummy=1 if yes)	0.231*	0.221*
	(0.126)	(0.126)
Other benefits	Controlled	Controlled
Constant	3.038***	3.053***
	(0.448)	(0.437)
Observations	1,472	1,472
F(57, 1414)	1.76	------
F (58, 1413)	------	1.82
Prob > F	0.0005	0.0002
R-squared	0.065	0.069

(Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1)

5.1 Diagnostic tests[9]

Several diagnostic tests have been performed in an effort to ensure the appropriate using of the models. At the first beginning, as omitted variable bias is omnipresent in econometric analysis, Ramsey RESET tests were conducted. With a p-value of 0.3709 (Model 1) and a p-value of 0.2416 (Model 2), Ramsey RESET test failed to reject to null hypothesis (Ho: the model has no omitted variables). Proceeding to test for heteroskedasticity, Breusch-Pagan/ Cook-Weisberg tests rejected the null hypothesis of constant variance at a p-value of 0.0830 in model 1 and 0.0334 in model 2, which indicate both models suffering from heteroskedasticity. To address heteroskedasticity, robust standard errors have been applied in both models. Finally, I need to ensure that the models do not suffer from multi-collinearity. Although multi-collinearity does not violate the assumption of OLS regression, it may distort the

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[9] The results of diagnostic tests can be found in Appendix 5.

interpretation of the results as perfect or nearly perfect collinearity inflates standard errors. Testing for multi-collinearity reveals that the mean of variance inflation factor (VIF) was 2.24 in model 1 and 2.10 in model 2. Since the highest VIF for all the other variables except for the square term in the regressions were below 4, it indicates that the multi-collinearity are not significant issues in those models. As the data used in the regressions is cross-sectional data, assumptions on autocorrelation are generally fulfilled and no specific test is needed to test for.

5.2 Estimation result and discussion

After performing the diagnostic status of the current models, the estimation results can be discussed. The coefficient of variables in model 1 and model 2 are very similar. The only difference between model 1 and model 2 is that model 2 has interact terms to check whether having many friend can increase the job satisfaction of migrant workers whose home provinces are far away from destination provinces. Therefore, the estimation result will be interpreted based on model 2 while model 1 will be served as a reference model when concerning the effect of interact terms on job satisfaction.

Interestingly, per capital household income has a negative coefficient at an insignificance level, which is contradicting to a number of job satisfaction and happiness studies both in China and in other countries (see e.g. Clark, 1997; Nielsen & Smyth, 2008). Empirical studies have shown that the longer a worker is working, the lower the worker is satisfied with his/her job. In this result, the hours of working/day has negative coefficient but does not at a significance level. However, working six/seven days/week (dummy =1 if yes) is positively associated with job satisfaction at a 0.1 significance level. Specifically, working more than five days per week can increase migrant workers' job satisfaction by 0.14 point. The possible explanation of this positive correlation is that migrant workers are afraid of losing jobs and being unemployed, as working is better than being unemployed. Therefore, the variables explained by conventional economic theories are not behaved as expected. Hypothesis 1 that rural-to-urban migrant workers' income is positively associated with job satisfaction and hypothesis 2 that hours of working are negatively associated with job satisfaction are

rejected.

Considering the set of hypothesis 3, the model strongly supports hypothesis 3c that the expectation of income change in the future is positively correlated with current job satisfaction. Comparing with decrease of expected income in 5 years, a big increase of expected income augments current job satisfaction by 0.38 point at a 0.01 significance level; a small increase of expected income enhances job satisfaction by approximately 0.27 point at a 0.01 significance level while even unchanged of expected income can increase job satisfaction by 0.27 point at a 0.01 significance level. The results indicate that job satisfaction is more sensitive to the future income, as both current income and previous income are not even on the border of significance. This is somewhat in line with a notion of Friedman's permanent income hypothesis, i.e. customers' consumption choices are more likely determined by permanent income rather than temporary income. In previous happiness studies, happiness had been proved to be a positive function of permanent income which is positively correlated with the expected future income (see Knight et al, 2009).

When considering the geographic and friendship effects on job satisfaction, working in origin provinces has a positive coefficient but is not at a significance level. The negative coefficients in model 1 indicate that migrant workers from Central-south, South-western and North-western have lower job satisfaction by comparing with those from Northeast region; and the positive coefficient of having many friends helps to increase the job satisfaction. In model 2, three interact terms are designed to testify whether there are interconnections between geographical distance and friendship in destination cities. The results display that migrant workers originally coming from North-western express lower job satisfaction. However, those who are coming from Central-south or North-western regions but having many friends in destination cities express higher job satisfaction at a significance level. Therefore, hypothesis 4b that the greater geographical distance between the origin province and the destination province is, the lower migrant workers' job satisfaction is reported is held. Hypothesis 4c that having many friends can help to increase the job satisfaction of migrant workers whose origin provinces are far away from resident province is supported.

As for other individual characteristic variables, the model does not appear to fully support that individual characteristics have an independent effect on job satisfaction. Specifically, hypothesis 5a that women have higher job satisfaction than men is not held, nor does hypothesis 5b that rural-to-urban migrant workers' job satisfaction is U-shaped in age. In order for the notion of hypothesis 5b to be supported, all the age categories should be positively associated with the dependent variable, as this would indicate that migrant workers belonged to these age categories have higher job satisfaction than those at the age of 30 to 39. However, none of the age categories is at a significance level. Comparing migrant workers whose highest educational level is lower middle schools with those who finished upper middle school, middle professional school or above, the latter group expresses lower job satisfaction at a significance level. Those whose highest educational attainment is elementary school also have lower job satisfaction, at a 0.05 significance level. Therefore, that migrant workers' job satisfaction is inverted U-shaped in education is strongly held. Individual characteristics such as being married, belonging to ethnic groups, years of duration in cities and its square term have coefficients that are in accordance with the hypotheses, but none of them are even on the border of significance.

Testing for the last hypothesis, the index of subjective evaluation of being discriminated against is strongly held by the model at a 0.01 significance level with a coefficient of -0.21. Therefore, the higher the index of being discriminated against, the lower job satisfaction is reported.

As for the control variables, in comparison with SOEs or collective enterprises, migrant workers worked in share-holding companies have higher job satisfaction. However, neither the employment characteristics nor the occupations have a significant effect on migrant workers' job satisfaction. As such, little can be derived from these variables, but they are even so kept in the model in an effort to control for the two aspects. Comparing with wholesales, retail and food services sector, migrant workers who are working in sectors such as social service, health, sports and social welfare, education, scientific research and government agents are more satisfied with their jobs. In addition, having pension fund from work units increases migrant workers' job

satisfaction by 0.22 point at a 0.05 significance level. With a p-value of 0.0002, F-test shows that job satisfaction is significantly explained by the all the variables in the regression.

6. Robustness tests

In order to ensure that the estimation results presented above hold also over other model specifications, numerous robustness tests were conducted. First, ordered logit model was used to test the hypotheses and the regression results are in the table 4.

Table 4: The results of ordered logit model [10]

Independent variables	Job satisfaction (1-5)	
	Model 3	
	Coefficient	Standard error
Conventional economic variables		
Log of per capita household income 2002	-0.00782	(0.0800)
Six/seven days of working/week	0.361*	(0.194)
Hours of working/day	-0.00432	(0.0205)
Reference income		
Log of previous yearly income	-0.0638	(0.0717)
Log of expected income in home village	0.0486	(0.0802)
Big increase (expected income in 5 years)	0.956***	(0.264)
Small increase (expected income in 5 years)	0.639***	(0.175)
Unchanged (expected income in 5 years)	0.607***	(0.181)
Geographic & friendship effect		
Working in origin provinces (dummy=1 if yes)	0.0811	(0.113)
Northern	0.0975	(0.277)
East	0.0427	(0.214)
Central southern	-0.235	(0.211)
South western	0.0600	(0.222)
North western	-0.410	(0.278)
Central southern*many friends	0.402	(0.261)
South western*many friends	-0.389	(0.298)
North western*many friends	0.851	(0.554)
Individual characteristics		
Male (dummy=1 if yes)	-0.115	(0.111)
Age (17-29)	-0.0222	(0.133)
Age (40-49)	0.0808	(0.138)
Age (50-60)	0.284	(0.211)
Middle level professional school and above	-0.544**	(0.259)
Upper middle school	-0.277*	(0.149)

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[10] Full regression results can be found in Appendix 3.

Elementary school	-0.276**	(0.131)
Below elementary school	-0.513***	(0.185)
Ethnic (dummy=1 if yes)	-0.264	(0.190)
Married (dummy=1 if yes)	0.169	(0.205)
Years of stay in the city	0.0221	(0.0319)
(Year of stay in the city)^2	-0.00146	(0.00154)
Subjective evaluation of being discriminated		
Index of discrimination	-0.537***	(0.168)
Control variables		
Ownership		
Share-holding company	0.763**	(0.370)
Other ownerships	Controlled	Controlled
Employment characteristics	Controlled	Controlled
Occupations	Controlled	Controlled
Sectors of work unit		
Social services	0.376***	(0.141)
Health, education, scientific research, government agents	0.730***	(0.269)
Others sectors	Controlled	Controlled
Benefits from work units		
Pension fund (dummy=1 if yes)	0.563*	(0.318)
Other benefits	Controlled	Controlled
Observations	1472	------
Log likelihood	-1733.7069	------
LR chi2 (58)	106.80	------
Prob > chi2	0.0001	------
Pseudo R2	0.0299	------

(*** p<0.01, ** p<0.05, * p<0.1)

As can be seen in table 4, the results in this specification generally confirm the results of the OLS model. Although the interaction effects between origin provinces and number of friends in destination cities are out of significance in this model, the positive coefficients at least give an impression that having many friends helps to enhance job satisfaction of migrant workers coming far away from destination cities.

Furthermore, an alternative specification of per capita household income was tested in both OLS model and ordered logit model. Parents' education or spouse's education are used to control for common unobserved variables (see e.g. Card, 1993; Chen & Hamori, 2009). In the happiness studies, parents' years of education and spouse' years of education have been served as instrument variables for income (see e.g. Knight et al, 2009). However, the job satisfaction question in CHIP (2002) survey

was answered by the head of household or a main member so that it is inaccurate to just use the head of household's parents' education or spouses' parents' education as instrument variables. Moreover, parents' years of education have the risk to be endogenous and as such, not valid instruments. In a paper written by Kingdon and Knight, consumption expenditure was used to be an instrument for income. As they mentioned: "expenditure seems to be a reasonable instrument for income since it is unlikely that measurement error in per capita income will be correlated with measurement error in per capita expenditure" (Kingdon &Knight, 2007). Therefore, in this thesis, per capita household consumption expenditure was employed as an alternative indicator of per capita household income. The instrumented estimations of both models are presented in table 5 (see model 4 and model 5).

Table 5: The results of Instrumented OLS model and instrumented ordered logit model[11]

Independent variables	Job satisfaction (dependent variable)			
	OLS (IV1) Model 4	Ordered logit (IV1) model 5	OLS (IV2) Model 6	Ordered logit (IV2) Model 7
Conventional economic variables				
Log of per capita household consumption expenditure 2002	-0.0403	-0.0843	-0.0559	-0.125
	(0.0420)	(0.0949)	(0.0450)	(0.102)
Six/seven days of working/week	0.140*	0.360*	0.120	0.333*
	(0.0813)	(0.194)	(0.0828)	(0.198)
Hours of working/day	-0.00180	-0.00295	-0.00218	-0.00741
	(0.00899)	(0.0205)	(0.00904)	(0.0212)
Reference income				
Log of previous yearly income	-0.0201	-0.0570	-0.0212	-0.0783
	(0.0324)	(0.0716)	(0.0343)	(0.0765)
Log of expected income in home village	0.0194	0.0543	0.0169	0.0534
	(0.0345)	(0.0800)	(0.0349)	(0.0824)
Big increase (expected income in 5 years)	0.387***	0.970***	0.361***	0.907***
	(0.123)	(0.265)	(0.122)	(0.269)
Small increase (expected income in 5 years)	0.275***	0.643***	0.251***	0.608***
	(0.0771)	(0.175)	(0.0787)	(0.179)
Unchanged (expected income in 5 years)	0.269***	0.611***	0.244***	0.569***
	(0.0791)	(0.181)	(0.0799)	(0.186)
Geographic & friendship effect				
Working in origin provinces (dummy=1 if yes)	0.0444	0.0840	0.0226	0.0592
	(0.0482)	(0.112)	(0.0568)	(0.137)
Northern	0.0262	0.0890	-0.0347	-0.142
	(0.125)	(0.278)	(0.172)	(0.395)
East	0.00859	0.0480	0.0100	0.0740
	(0.0916)	(0.214)	(0.162)	(0.364)
Central southern	-0.0953	-0.238	-0.0793	-0.270

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[11] Full regression results can be found in Appendix 4.

	(0.0905)	(0.211)	(0.162)	(0.368)
South western	0.00594	0.0631	0.151	0.377
	(0.0950)	(0.223)	(0.178)	(0.411)
North western	-0.215*	-0.425	-0.219	-0.509
	(0.123)	(0.279)	(0.207)	(0.486)
Central southern*many friends	0.164*	0.413	0.127	0.333
	(0.0979)	(0.261)	(0.102)	(0.273)
South western*many friends	-0.177	-0.459	-0.108	-0.291
	(0.129)	(0.298)	(0.129)	(0.302)
North western * many friends	0.388*	0.858	0.461*	1.000*
	(0.234)	(0.554)	(0.250)	(0.574)
Individual characteristics				
Male (dummy=1 if yes)	-0.0385	-0.119	-0.0208	-0.0629
	(0.0477)	(0.111)	(0.0480)	(0.113)
Age (17-29)	-0.00133	-0.0219	0.0171	0.00257
	(0.0569)	(0.133)	(0.0578)	(0.137)
Age (40-49)	0.0406	0.0828	0.0171	0.0184
	(0.0598)	(0.138)	(0.0600)	(0.141)
Age (50-60))	0.0938	0.290	0.0585	0.196
	(0.0941)	(0.211)	(0.0952)	(0.216)
Middle level professional school and above	-0.221*	-0.520**	-0.186	-0.437*
	(0.118)	(0.260)	(0.122)	(0.265)
Upper middle school	-0.114*	-0.271*	-0.0859	-0.216
	(0.0611)	(0.149)	(0.0633)	(0.155)
Elementary school	-0.123**	-0.288**	-0.100*	-0.254*
	(0.0579)	(0.131)	(0.0571)	(0.133)
Below elementary school	-0.198**	-0.521***	-0.124	-0.330*
	(0.0818)	(0.185)	(0.0829)	(0.190)
Ethnic (dummy=1 if yes)	-0.108	-0.260	-0.0837	-0.204
	(0.0843)	(0.190)	(0.0876)	(0.199)
Married (dummy=1 if yes)	0.0695	0.204	0.0543	0.198
	(0.0911)	(0.204)	(0.0938)	(0.214)
Years of stay in the city	0.0131	0.0269	0.00399	0.00515

	(0.0137)	(0.0320)	(0.0139)	(0.0327)
(Year of stay in the city)^2	-0.000721	-0.00164	-0.000265	-0.000594
	(0.000645)	(0.00154)	(0.000650)	(0.00157)
Subjective evaluation of being discriminated				
Index of discrimination	-0.203***	-0.526***	-0.212***	-0.578***
	(0.0748)	(0.168)	(0.0779)	(0.178)
Control variables				
Ownership	Controlled	Controlled	Controlled	Controlled
Share-holding company	0.325**	0.743**	0.389***	0.912**
	(0.144)	(0.370)	(0.150)	(0.381)
Rural enterprises and other ownerships	0.122	0.301	0.198*	0.511**
	(0.0995)	(0.224)	(0.103)	(0.233)
Employment characteristics	Controlled	Controlled	Controlled	Controlled
Occupations	Controlled	Controlled	Controlled	Controlled
Sectors of work unit	Controlled	Controlled	Controlled	Controlled
Social services	0.154***	0.151**	0.105*	0.253*
	(0.0585)	(0.0588)	(0.0589)	(0.145)
Health, education, scientific research, government agents	0.314***	0.310***	0.236**	0.581**
	(0.115)	(0.115)	(0.118)	(0.275)
Benefits from work units	Controlled	Controlled	Controlled	Controlled
Pension fund (dummy=1 if yes)	0.222*	0.577*	0.223*	0.615*
	(0.126)	(0.319)	(0.133)	(0.331)
City dummies	------	------	Controlled	Controlled
Constant	3.172***	------	3.506***	------
	(0.467)	------	(0.505)	------
Observations	1,471	1,471	1,471	1,471
F(58, 1412)/ F(83, 1387)	1.88	------	2.10	------
Log likelihood	------	-1728.9123	------	-1698.3376
LR chi2 (58)/LR chi2 (83)	------	108.76	------	167.90
Prob > F/ Prob>chi2	0.0001	0.0001	0.0000	0.0000
R-squared/ Pseudo R2	0.070	0.0305	0.105	0.0476

(Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1)

As displayed in model 4 and model 5, although per capita household income was replaced by per capita household consumption expenditure, the variables explained by conventional economic theory do not behave as expected. Reference concepts are only applied to the expected future income. The geographic and friendship effects are strongly supported in the instrumented OLS model where migrant workers who originally come from North-western region have lower job satisfaction and those who come from North-western but have many friends in destination cities report higher job satisfaction at a 0.1 significance level. The individual characteristics such as gender, age, marital status, ethnicity, years of staying are not significantly explaining job satisfaction even while using the instrument variables in both models. However, the independent effect of education is substantially confirmed by both models. The hypothesis that migrant workers experiencing strong discrimination have lower job satisfaction is also held in both models. As for the control variables, employment characteristics and occupations remain insignificant in the instrumented models.

Beyond the alternative specification of the independent variable, the general robustness of the main model was also tested by adding additional control variables in both OLS and ordered logit models, 27 city dummy variables were added. As can be seen from model 6 and model 7, the results confirm the findings in the main model to a large circumstance.

While virtually all the alternative specifications support the results in the main OLS model, model 2 presented as the main model is selected for its ability to demonstrate the results based on weighting the aspects of theoretical appropriateness, significance level and model fit[12]. In sum, the robustness tests confirm the results of the OLS model as the results agree over the model specifications to a large extent.

7. Conclusion

This study examines the determinants of Chinese rural-to-urban migrant workers' job satisfaction. By using the standard economic model, several aspects are focused to check. The OLS model and ordered logit model reject the null hypothesis of a positive correlation between income and job satisfaction, and do not support a negative correlation between hours of working and job satisfaction at any significance

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[12] As all the OLS models suffer from heteroskedasticity, robust standard errors are applied to maintain constant variance. The measurement of adjusted R-squared can not be obtained once robust standard errors are employed. After adding additional 27 city dummies in model 6, the multiple regression's degree of freedom decreased which indicates the ability to test the model is eroded. Although the R-squared is higher in model 6 than in model 2, as the statistic power in model 6 is lower than in model 2, model 2 remains the best model to display the results.

levels. None of the models show a significant effect of gender, age, marital status, ethnicity, years of staying in urban cities on job satisfaction, which have substantial empirical support from previous studies.

The results indicate that working more than five days per week makes migrant workers more satisfied with their jobs. The possible explanation can be that migrant workers get very low salary and are afraid of being unemployed, thus they are willing to work for more days. Migrant workers' job satisfaction is found to be much more sensitive to future income than to previous income and current income. Compared with decrease of expected future income in five years, unchanged, a small increase and a big increase can augment current job satisfaction. This can be explained by the concept of "permanent income" where subjective well-being is a positive function of permanent income which is positively correlated with future income. The distance between origin provinces and destination cities has an effect on migrant workers' job satisfaction. Migrant workers whose origin provinces are far away from resident provinces report lower job satisfaction. However, they are more satisfied with jobs if they have many friends in the resident cities. The most interesting finding of this thesis is that migrant workers' job satisfaction is inverted U-shaped in education. More specifically, migrant workers whose highest educational achievement were lower middle school express the highest job satisfaction while both those who graduated from upper middle school or above and those whose highest educational attainment were elementary school have lower job satisfaction. This is not in line with any previous job satisfaction or happiness studies where job satisfaction or happiness is negatively correlated with educational levels (see Chuang et al, 1990; Warr, 1992; Clark & Oswald, 1996). The possible explanation can be attributed to the unique situation of Chinese migrant workers. In China, nine years of compulsory education is a watershed of educational levels. Migrant workers are originally from poor rural areas where are under-developed both economically and socially. In rural areas, a number of people can not go to upper middle school partially because of the poor economic situations and partially because of unqualified candidacies. As such, most of migrant workers only receive nine years of compulsory education, i.e. lower middle schooling. Comparing with those whose highest educational level were elementary school, migrant workers who graduated from lower middle school are better educated and more qualified when searching for jobs. However, comparing with those who finished upper middle school or above, migrant workers who only received lower middle school education also have an advantage over

them in term of wage requirements. That migrant workers are discriminated against by urban workers is not uncommon. In this thesis, an index of subject evaluation of being discriminated against is constructed. The results demonstrate that the more severe discrimination migrant workers received, the lower job satisfaction was reported.

The above empirical analyses answered the questions in section 3. First, the variables explained by conventional economic theory are not behaved as expected. Second, the reference concept fits the case of Chinese migrant workers to a certain degree. Third, migrant workers' job satisfaction is indeed influenced by geographic and friendship effects. Fourth, except for education, other variables capturing individual characteristics do not have an independent effect on migrant workers' job satisfaction. Fifth, being discriminated against by urban workers can significantly lower migrant workers' job satisfaction.

Turning to the policy implication of the analysis, several suggestions can be offered. First of all, job satisfaction is negatively correlated with resignation rate. In CHIP (2002) survey, only 26.73% of settled migrant workers were satisfied with their jobs. Beyond the effect of economic recession in 2008, that migrant workers were generally unsatisfied with their jobs might be an underlying cause of the great labor shortage. As can be seen in the empirical analysis, being discriminated against by urban workers substantially lowers migrant workers' job satisfaction. Eight aspects evaluated by migrant workers contained equal pay for equal work, type of work, working hours, promotion, housing provision, social securities, other benefits and income in-kind, which are of great importance to migrant workers' daily life. Indeed, this type of discrimination can not be blamed without referring to the unique *Chinese Household Registration System (i.e. Hukou* system*)*. The artificial institutional segregation creates a dual society and a dual labor market while migrant workers are forced to stand on the inferior side of this society. Great labor shortage provides an opportunity for policymakers to rethink the role of migrant workers. Actionable prescription for addressing the great labor shortage is to eliminate the discrimination against rural-urban migrant workers. As mentioned in section 2, *Hukou* system blocks migrant workers' access to a wide range of social welfare. Migrant workers even face great institutional obstacles such as obtaining temporary resident permits. As such, the restrictions on *Hukou* system should be softened and the *Hukou* system reform should be arranged with an aim to counterbalance the inequality between rural and urban citizens.

Second, except for the *Hukou system*, inefficient enforcement of the rule of law

aggravated the discrimination against migrant workers. Without a formal contract of working conditions, migrant workers are exposure to successively expropriate from urban employers, for instance, working for a long time but bearing the risk of wage arrear. Migrant workers' job satisfaction is sensitive to expected income in the future. Current working situations not only make migrant workers feel deprived, resulting difficult integrations into urban society, but also lower their expectation of future income. Therefore, to augment migrant workers' job satisfaction, policymakers should strengthen the enforcement of Labor Law and protect migrant workers' basic human rights.

Furthermore, the majority of migrant workers remain unskilled labor as most of them only finished lower middle school. According to Chen & Hamori (2009), migrant workers with a higher educational level have a stronger prospect of entering the high-level labor market and securing permanent employment. An increased likelihood of entering high-level labor market and securing permanent employment will increase the inclination of migrates of migrant workers with a higher educational level. Since China is shifting its development direction from the world factory to innovation development, policymakers should also emphasize the importance of improving education in rural China in conjunction with other institutional policy implications.

This thesis also confirmed the methodology paper written by Ferrer-i-Carbonell & Frijters (2004) in the sense that the function of subjective evaluation of job satisfaction is insensitive to whether the dependent variables take a cardinal form or an ordinal form, although the personality has not been controlled. However, the data used in this study is from CHIP (2002) survey, somewhat outdated. The conditions might have already changed during these 10 years. Therefore, the determinants of rural-to-urban migrant workers' job satisfaction need to be explored further in the future.

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Appendix 1: Descriptive statistics of variables

Variable	description of variable	Obs	Mean	Std.Dev
Conventional economic variables				
Job satisfaction	Job satisfaction of respondents (1=not satisfied at all; 2=somewhat satisfied; 3=so-so; 4=relative satisfied; 5=very satisfied)	1817	2.98514	0.815799
Log of per capita household income 2002	Ln(per capita household income) in 2002	1816	8.519675	0.6762217
Log of per capital household expenditure 2002	Ln(per capita household consumption expenditure) in 2002	1816	8.253609	0.6000973
Six/seven days/week	A binary dummy variable where 1=working six or seven days per week	1817	0.8376445	0.3688782
Hours of working/day	The number of working hours/day	1659	10.35503	2.63889
Reference group				
Log of previous yearly income	Ln (yearly income just before respondent left home village)	1505	7.137681	1.110592
Log of expected income in home village	Ln (expected income if respondent were still at home village)	1577	7.497666	0.963483
Big increase (expected income in 5 years)	A binary dummy variable where 1=expect big increase in income in 5 years and 0=otherwise	1817	0.0698954	0.2550409
Small increase (expected income in 5 years)	A binary dummy variable where 1=expect small increase in income in 5 years and 0=otherwise	1817	0.5481563	0.4978126
Unchanged (expected income in 5 years)	A binary dummy variable where 1=expect unchanged in income in 5 years and 0=otherwise	1817	0.2850853	0.4515793
Decrease (expected income in 5 years)	A binary dummy variable where 1=expect decrease in income in 5 years and 0=otherwise	1817	0.096863	0.2958525
Geographic effect				
Working in origin provinces	A binary dummy variable where 1=migrant workers working in origin provinces	1817	0.698404	0.4590772
Northern	A binary dummy variable where 1=migrant workers ' origin provinces belonging to Northern region	1817	0.776004	0.2676154
Northeast	A binary dummy variable where 1=migrant workers ' origin provinces belonging to Northeast region	1817	0.0759494	0.26499
East	A binary dummy variable where 1=migrant workers ' origin provinces belonging to East region	1817	0.2564667	0.4368026
Central southern	A binary dummy variable where 1=migrant workers ' origin provinces belonging to central southern region	1817	0.2911392	0.4544126
South western	A binary dummy variable where 1=migrant workers ' origin provinces belonging to South western region	1817	0.2228949	0.4163029
North western	A binary dummy variable where 1=migrant workers ' origin provinces belonging to North western region	1817	0.0759494	0.26499
No friends	A binary dummy variable where 1=migrant workers do not have any friend at destination city	1817	0.0324711	0.1772965
Some friends	A binary dummy variable where 1=migrant workers have some friends (1-10) at destination city	1817	0.8293891	0.3762722
Many friends	A binary dummy variable where 1=migrant workers have many friends (more than 11 friends) at destination city	1817	0.1381398	0.3451416
Central southern & many friends	A binary dummy variable where 1=migrant workers whose origin provinces belong to central southern region and have many friends at destination city	1817	0.0500826	0.2181754
South western & many friends	A binary dummy variable where 1=migrant workers whose origin provinces belong to south western region and have many friends at destination city	1817	0.0297193	0.1698586

North western & many friends	A binary dummy variable where 1=migrant workers whose origin provinces belong to north western region and have many friends at destination city	1817	0.0099064	0.0990641
Individual characteristics				
Male (dummy=1 if yes)	A binary dummy variable where 1=male and 0=female	1817	0.6026417	0.489486
Age (17-29)	A binary dummy variable where 1= belong to this age group and 0=otherwise	1817	0.2663731	0.4421833
Age (30-39)	A binary dummy variable where 1= belong to this age group and 0=otherwise	1817	0.4909191	0.5000552
Age (40-49)	A binary dummy variable where 1= belong to this age group and 0=otherwise	1817	0.173913	0.379139
Age (50-60)	A binary dummy variable where 1= belong to this age group and 0=otherwise	1817	0.687947	0.2531744
Middle level professional school and above	A binary dummy variable where 1=highest educational qualification completed in middle level professional school or above, 0=otherwise	1817	0.0566868	0.2313069
Upper middle school	A binary dummy variable where 1=highest educational qualification completed in upper middle school, 0=otherwise	1817	0.143093	0.3502641
Lower middle school	A binary dummy variable where 1=highest educational qualification completed in lower middle school, 0=otherwise	1817	0.4887177	0.5000103
Elementary school	A binary dummy variable where 1=highest educational qualification completed in elementary school, 0=otherwise	1817	0.2168409	0.4122068
Below elementary school	A binary dummy variable where 1=highest educational qualification below elementary school, 0=otherwise	1817	0.0946614	0.2928275
Ethnic (dummy=1 if yes)	A binary dummy variable where 1=ethnic, 0=non-ethnic	1817	0.0792515	0.2702053
Married (dummy=1 if yes)	A binary dummy variable where 1=married, 0=single	1817	0.9020363	0.2973474
Years of staying	The number of years that migrant workers stay in the city	1817	7.318107	5.176092
(Years of staying)^2	The square term of years of staying	1817	80.33187	112.8356
Subjective evaluation of being discriminated				
Index of discrimination	An index of migrant workers' subjective evaluation of being discriminated on eight aspects	1817	1.764919	0.3141481
Ownership of work unit				
SOE or Collective	A binary dummy variable where 1=working in SOE or Collective firms, 0= otherwise	1817	0.0941112	0.2920637
Urban private firm	A binary dummy variable where 1=working in urban private firms, 0= otherwise	1817	0.0588883	0.2354803
Self-employed	A binary dummy variable where 1=working as self-employed, 0= otherwise	1817	0.5542102	0.4971894
FIE	A binary dummy variable where 1=working in FIE, 0= otherwise	1817	0.0049532	0.0702239
Share holding company	A binary dummy variable where 1=working in share holding companies, 0= otherwise	1817	0.0220143	0.1467703
Rural enterprises and others	A binary dummy variable where 1=working in rural enterprises or others, 0= otherwise	1817	0.1788663	0.3833458
Employment characteristics				
Permanent worker	A binary dummy variable where 1=permanent workers , 0= otherwise	1817	0.0022014	0.0468806
Long-term contract worker	A binary dummy variable where 1=long-term contract workers, 0= otherwise	1817	0.0418272	0.2002492
Temporary or short-term contract worker	A binary dummy variable where 1=short-term contract workers, 0= otherwise	1817	0.2388553	0.4265015
private businessman	A binary dummy variable where 1=self-employed, 0= otherwise	1817	0.6070446	0.4885415
Other employment characteristics	A binary dummy variable where 1=other employment characteristics, 0= otherwise	1817	0.023115	0.1503102

Occupation category				
owner of private firm or self-employed	A binary dummy variable where 1=having a self-employed occupation, 0= otherwise	1659	0.5412899	0.4984425
Professional or technician	A binary dummy variable where 1=having a professional occupation , 0= otherwise	1659	0.421941	0.2010923
Responsible person of enterprises	A binary dummy variable where 1=having a responsible person occupation , 0= otherwise	1659	0.0042194	0.0648393
Clerical staff	A binary dummy variable where 1=having a clerical occupation , 0= otherwise	1659	0.0253165	0.1571318
Manufacturing worker	A binary dummy variable where 1=having a manufacturing occupation , 0= otherwise	1659	0.0307414	0.1726683
Commercial worker	A binary dummy variable where 1=having a commercial occupation , 0= otherwise	1659	0.0650995	0.2467757
Service worker	A binary dummy variable where 1=having a service occupation , 0= otherwise	1659	0.1898734	0.3923191
Construction worker	A binary dummy variable where 1=having a construction occupation , 0= otherwise	1659	0.0229054	0.1496469
Domestic service worker	A binary dummy variable where 1=having a domestic service occupation , 0= otherwise	1659	0.007836	0.0882005
Others	A binary dummy variable where 1=having a occupation not mentioned above , 0= otherwise	1659	0.0705244	0.2561059
Sector of work unit				
Farm, forest, geological prospecting	A binary dummy variable where 1=work unit belonged to farm, forest, husbandry and fishery; Geological prospecting, irrigation administration, 0= otherwise	1817	0.0055036	0.074002
Manufacturing	A binary dummy variable where 1=work unit belonged to manufacturing sector , 0= otherwise	1817	0.0770501	0.2667443
Construction	A binary dummy variable where 1=work unit belonged to construction sector , 0= otherwise	1817	0.379747	0.1911877
Wholesales	A binary dummy variable where 1=work unit belonged to wholesales sector , 0= otherwise	1817	0.4265272	0.4947084
Social service	A binary dummy variable where 1=work unit belonged to social service sector , 0= otherwise	1817	0.2047331	0.4036175
Health/education/government	A binary dummy variable where 1=work unit belonged to health/education/government sectors , 0= otherwise	1817	0.456797	0.208847
Other sector	A binary dummy variable where 1=work unit not belonged above sectors , 0= otherwise	1817	0.1155751	0.3198028
Benefit from work unit				
Pension (dummy=1 if yes)	A binary dummy variable where 1=getting pension fund, 0= not	1659	0.0415913	0.1997136
Medical (dummy=1 if yes)	A binary dummy variable where 1=getting medical insurance , 0= not	1659	0.0241109	0.1534398
Unemployment (dummy=1 if yes)	A binary dummy variable where 1=getting unemployment insurance , 0= not	1659	0.0144665	0.1194398
Housing (dummy=1 if yes)	A binary dummy variable where 1=getting housing , 0= not	1659	0.0855937	0.2798475

Appendix 2: Regression output of OLS models

	Job satisfaction	
Independent variables	**Model 1**	**Model 2**
Conventional economic variables		
Log of per capita household income 2002	-0.0122	-0.0152
	(0.0339)	(0.0338)
Six/seven days of working/week	0.135*	0.142*
	(0.0812)	(0.0812)
Hours of working/day	-0.00232	-0.00265
	(0.00895)	(0.00899)
Reference income		
Log of previous yearly income	-0.0283	-0.0241
	(0.0329)	(0.0327)
Log of expected income in home village	0.0218	0.0184
	(0.0349)	(0.0348)
Big increase (expected income in 5 years)	0.393***	0.382***
	(0.122)	(0.123)
Small increase (expected income in 5 years)	0.277***	0.274***
	(0.0764)	(0.0771)
Unchanged (expected income in 5 years)	0.267***	0.268***
	(0.0783)	(0.0789)
Geographic & friendship effect		
Working in origin provinces (dummy=1 if yes)	0.0424	0.0408
	(0.0485)	(0.0485)
Northern	0.0279	0.0304
	(0.125)	(0.125)
East	0.00489	0.00582
	(0.0917)	(0.0915)
Central southern	-0.0749	-0.0951
	(0.0891)	(0.0905)
South western	-0.0174	0.00452
	(0.0939)	(0.0951)
North western	-0.164	-0.211*
	(0.118)	(0.123)
Some friends	-0.0273	------
	(0.134)	------
Many friends	0.0204	------
	(0.145)	------
Central southern & many friends	------	0.163*
	------	(0.0986)
South western & many friends	------	-0.135
	------	(0.134)
North western & many friends	------	0.390*
	-------	(0.234)
Individual characteristics		
Male (dummy=1 if yes)	-0.0453	-0.0403
	(0.0476)	(0.0477)
Age (17-29)	-0.00394	-0.000849
	(0.0570)	(0.0569)
Age (40-49)	0.0449	0.0391
	(0.0599)	(0.0597)
Age (50-60))	0.0987	0.0941

	(0.0943)	(0.0941)
Middle level professional school and above	-0.232*	-0.236**
	(0.119)	(0.117)
Upper middle school	-0.115*	-0.117*
	(0.0612)	(0.0609)
Elementary school	-0.115**	-0.118**
	(0.0580)	(0.0580)
Below elementary school	-0.199**	-0.200**
	(0.0822)	(0.0821)
Ethnic (dummy=1 if yes)	-0.112	-0.111
	(0.0850)	(0.0846)
Married (dummy=1 if yes)	0.0465	0.0467
	(0.0932)	(0.0934)
Years of stay in the city	0.0106	0.0106
	(0.0138)	(0.0137)
(Year of stay in the city)^2	-0.000625	-0.000626
	(0.000654)	(0.000648)
Subjective evaluation of being discriminated		
Index of discrimination	-0.201***	-0.212***
	(0.0758)	(0.0756)
Control variables		
Ownership		
Urban private firm (including partnership)	0.142	0.137
	(0.115)	(0.115)
Urban self-employed	0.121	0.119
	(0.0963)	(0.0964)
FIE (including joint venture, foreign company)	-0.0461	-0.0961
	(0.339)	(0.337)
Share-holding company	0.342**	0.338**
	(0.145)	(0.144)
Rural enterprises and other ownerships	0.125	0.126
	(0.0995)	(0.0995)
Employment characteristics		
Permanent worker of enterprise or institution	0.199	0.193
	(0.476)	(0.475)
Long-term contract worker	0.0267	0.0328
	(0.131)	(0.131)
Short-term contract worker	0.0512	0.0461
	(0.0870)	(0.0871)
Other employment characteristics	-0.198	-0.206
	(0.170)	(0.170)
Occupations		
Professional or technician	-0.188	-0.194
	(0.135)	(0.134)
Responsible person of enterprise or institution	-0.345	-0.317
	(0.532)	(0.514)
Clerical staff	0.193	0.204
	(0.161)	(0.159)
Manufacturing worker	-0.177	-0.172
	(0.156)	(0.157)
Commercial worker	-0.0773	-0.0710
	(0.0966)	(0.0972)
Service worker	-0.0704	-0.0609
	(0.0844)	(0.0845)

Construction worker	-0.152	-0.170
	(0.199)	(0.196)
Domestic service worker	-0.298	-0.289
	(0.254)	(0.256)
Other occupation	-0.134	-0.115
	(0.126)	(0.126)
Sectors of work unit		
Farm, forest, geological prospecting	0.159	0.162
	(0.268)	(0.262)
Manufacturing	-0.0255	-0.0216
	(0.0895)	(0.0898)
Constructions	0.0550	0.0768
	(0.142)	(0.138)
Social services	0.154***	0.151**
	(0.0585)	(0.0588)
Health, education, scientific research, government agents	0.314***	0.310***
	(0.115)	(0.115)
Others sectors	0.0711	0.0751
	(0.0782)	(0.0779)
Benefits from work units		
Pension fund (dummy=1 if yes)	0.231*	0.221*
	(0.126)	(0.126)
Medical insurance (dummy=1 if yes)	0.127	0.127
	(0.172)	(0.172)
Unemployment insurance (dummy=1 if yes)	-0.0811	-0.0584
	(0.210)	(0.210)
Housing (dummy=1 if yes)	-0.0368	-0.0434
	(0.0879)	(0.0875)
Constant	3.038***	3.053***
	(0.448)	(0.437)
Observations	1,472	1,472
F(57, 1414)	1.75	------
F (58, 1413)	------	1.82
Prob > F	0.0005	0.0002
R-squared	0.065	0.069

(Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1)

Appendix 3: Regression output of ordered logit model

Independent variables	Job satisfaction (1-5) Model 3	
	Coefficient	Standard error
Conventional economic variables		
Log of per capita household income 2002	-0.00782	(0.0800)
Six/seven days of working/week	0.361*	(0.194)
Hours of working/day	-0.00432	(0.0205)
Reference income		
Log of previous yearly income	-0.0638	(0.0717)
Log of expected income in home village	0.0486	(0.0802)
Big increase (expected income in 5 years)	0.956***	(0.264)
Small increase (expected income in 5 years)	0.639***	(0.175)
Unchanged (expected income in 5 years)	0.607***	(0.181)
Geographic & friendship effect		
Working in origin provinces (dummy=1 if yes)	0.0811	(0.113)
Northern	0.0975	(0.277)
East	0.0427	(0.214)
Central southern	-0.235	(0.211)
South western	0.0600	(0.222)
North western	-0.410	(0.278)
Central southern*many friends	0.402	(0.261)
South western*many friends	-0.389	(0.298)
North western*many friends	0.851	(0.554)
Individual characteristics		
Male (dummy=1 if yes)	-0.115	(0.111)
Age (17-29)	-0.0222	(0.133)
Age (40-49)	0.0808	(0.138)
Age (50-60)	0.284	(0.211)
Middle level professional school and above	-0.544**	(0.259)
Upper middle school	-0.277*	(0.149)
Elementary school	-0.276**	(0.131)
Below elementary school	-0.513***	(0.185)
Ethnic (dummy=1 if yes)	-0.264	(0.190)
Married (dummy=1 if yes)	0.169	(0.205)
Years of stay in the city	0.0221	(0.0319)
(Year of stay in the city)^2	-0.00146	(0.00154)
Subjective evaluation of being discriminated		
Index of discrimination	-0.537***	(0.168)
Control variables		
Ownership		
Urban private firm (including partnership)	0.375	(0.268)
Urban self-employed	0.293	(0.218)
FIE (including joint venture, foreign company)	-0.178	(0.671)
Share-holding company	0.763**	(0.370)
Other ownerships	0.313	(0.224)
Employment characteristics		
Permanent worker of enterprise or institution	0.551	(1.074)
Long-term contract worker	0.0751	(0.305)
Short-term contract worker	0.123	(0.195)
Other employment characteristics	-0.441	(0.369)
Occupations		
Professional or technician	-0.490	(0.320)

Responsible person of enterprise or institution	-0.645	(0.952)
Clerical staff	0.487	(0.389)
Manufacturing worker	-0.509	(0.355)
Commercial worker	-0.135	(0.222)
Service worker	-0.209	(0.193)
Construction worker	-0.426	(0.490)
Domestic service worker	-0.793	(0.604)
Other occupation	-0.295	(0.271)
Sectors of work unit		
Farm, forest, geological prospecting	0.343	(0.654)
Manufacturing	-0.0556	(0.212)
Constructions	0.204	(0.365)
Social services	0.376***	(0.141)
Health, education, scientific research, government agents	0.730***	(0.269)
Others sectors	0.245	(0.181)
Benefits from work units		
Pension fund (dummy=1 if yes)	0.563*	(0.318)
Medical insurance (dummy=1 if yes)	0.291	(0.475)
Unemployment insurance (dummy=1 if yes)	-0.170	(0.552)
Housing (dummy=1 if yes)	-0.0857	(0.194)
Observations	1472	------
Log likelihood	-1734.3207	------
LR chi2 (59)	106.80	------
Prob > chi2	0.0001	------
Pseudo R2	0.0299	------

(*** p<0.01, ** p<0.05, * p<0.1)

Appendix 4: Regression output of instrumented OLS & ordered logit models

Independent variables	Job satisfaction (dependent variable)			
	OLS (IV1) Model 4	Ordered logit (IV1) model 5	OLS (IV2) Model 6	Ordered logit (IV2) Model 7
Conventional economic variables				
Log of per capita household consumption expenditure 2002	-0.0403	-0.0843	-0.0559	-0.125
	(0.0420)	(0.0949)	(0.0450)	(0.102)
Six/seven days of working/week	0.140*	0.360*	0.120	0.333*
	(0.0813)	(0.194)	(0.0828)	(0.198)
Hours of working/day	-0.00180	-0.00295	-0.00218	-0.00741
	(0.00899)	(0.0205)	(0.00904)	(0.0212)
Reference income				
Log of previous yearly income	-0.0201	-0.0570	-0.0212	-0.0783
	(0.0324)	(0.0716)	(0.0343)	(0.0765)
Log of expected income in home village	0.0194	0.0543	0.0169	0.0534
	(0.0345)	(0.0800)	(0.0349)	(0.0824)
Big increase (expected income in 5 years)	0.387***	0.970***	0.361***	0.907***
	(0.123)	(0.265)	(0.122)	(0.269)
Small increase (expected income in 5 years)	0.275***	0.643***	0.251***	0.608***
	(0.0771)	(0.175)	(0.0787)	(0.179)
Unchanged (expected income in 5 years)	0.269***	0.611***	0.244***	0.569***
	(0.0791)	(0.181)	(0.0799)	(0.186)
Geographic & friendship effect				
Working in origin provinces (dummy=1 if yes)	0.0444	0.0840	0.0226	0.0592
	(0.0482)	(0.112)	(0.0568)	(0.137)
Northern	0.0262	0.0890	-0.0347	-0.142
	(0.125)	(0.278)	(0.172)	(0.395)
East	0.00859	0.0480	0.0100	0.0740
	(0.0916)	(0.214)	(0.162)	(0.364)
Central southern	-0.0953	-0.238	-0.0793	-0.270
	(0.0905)	(0.211)	(0.162)	(0.368)
South western	0.00594	0.0631	0.151	0.377

	(0.0950)	(0.223)	(0.178)	(0.411)
North western	-0.215*	-0.425	-0.219	-0.509
	(0.123)	(0.279)	(0.207)	(0.486)
Central southern*many friends	0.164*	0.413	0.127	0.333
	(0.0979)	(0.261)	(0.102)	(0.273)
South western*many friends	-0.177	-0.459	-0.108	-0.291
	(0.129)	(0.298)	(0.129)	(0.302)
North western *many friends	0.388*	0.858	0.461*	1.000*
	(0.234)	(0.554)	(0.250)	(0.574)
Individual characteristics				
Male (dummy=1 if yes)	-0.0385	-0.119	-0.0208	-0.0629
	(0.0477)	(0.111)	(0.0480)	(0.113)
Age (17-29)	-0.00133	-0.0219	0.0171	0.00257
	(0.0569)	(0.133)	(0.0578)	(0.137)
Age (40-49)	0.0406	0.0828	0.0171	0.0184
	(0.0598)	(0.138)	(0.0600)	(0.141)
Age (50-60))	0.0938	0.290	0.0585	0.196
	(0.0941)	(0.211)	(0.0952)	(0.216)
Middle level professional school and above	-0.221*	-0.520**	-0.186	-0.437*
	(0.118)	(0.260)	(0.122)	(0.265)
Upper middle school	-0.114*	-0.271*	-0.0859	-0.216
	(0.0611)	(0.149)	(0.0633)	(0.155)
Elementary school	-0.123**	-0.288**	-0.100*	-0.254*
	(0.0579)	(0.131)	(0.0571)	(0.133)
Below elementary school	-0.198**	-0.521***	-0.124	-0.330*
	(0.0818)	(0.185)	(0.0829)	(0.190)
Ethnic (dummy=1 if yes)	-0.108	-0.260	-0.0837	-0.204
	(0.0843)	(0.190)	(0.0876)	(0.199)
Married (dummy=1 if yes)	0.0695	0.204	0.0543	0.198
	(0.0911)	(0.204)	(0.0938)	(0.214)
Years of stay in the city	0.0131	0.0269	0.00399	0.00515
	(0.0137)	(0.0320)	(0.0139)	(0.0327)
(Year of stay in the city)^2	-0.000721	-0.00164	-0.000265	-0.000594
	(0.000645)	(0.00154)	(0.000650)	(0.00157)
Subjective evaluation of being discriminated				

Index of discrimination	-0.203***	-0.526***	-0.212***	-0.578***
	(0.0748)	(0.168)	(0.0779)	(0.178)
Control variables				
Ownership				
Urban private firm (including partnership)	0.130	0.357	0.165	0.461*
	(0.115)	(0.268)	(0.117)	(0.275)
Urban self-employed	0.110	0.272	0.112	0.281
	(0.0968)	(0.219)	(0.100)	(0.226)
FIE (including joint venture, foreign company)	-0.108	-0.201	-0.121	-0.213
	(0.337)	(0.672)	(0.357)	(0.681)
Share-holding company	0.325**	0.743**	0.389***	0.912**
	(0.144)	(0.370)	(0.150)	(0.381)
Rural enterprises and other ownerships	0.122	0.301	0.198*	0.511**
	(0.0995)	(0.224)	(0.103)	(0.233)
Employment characteristics				
Permanent worker of enterprise or institution	0.208	0.560	0.241	0.681
	(0.476)	(1.075)	(0.494)	(1.099)
Long-term contract worker	0.0388	0.0799	0.000881	0.00884
	(0.131)	(0.306)	(0.131)	(0.312)
Short-term contract worker	0.0547	0.136	0.0271	0.0895
	(0.0866)	(0.196)	(0.0878)	(0.203)
Other employment characteristics	-0.193	-0.419	-0.238	-0.636*
	(0.169)	(0.369)	(0.172)	(0.381)
Occupations				
Professional or technician	-0.207	-0.516	-0.190	-0.526
	(0.134)	(0.320)	(0.137)	(0.329)
Responsible person of enterprise or institution	-0.330	-0.668	-0.268	-0.610
	(0.511)	(0.950)	(0.485)	(0.922)
Clerical staff	0.186	0.453	0.186	0.448
	(0.160)	(0.390)	(0.164)	(0.397)
Manufacturing worker	-0.198	-0.569	-0.190	-0.555
	(0.157)	(0.356)	(0.164)	(0.367)
Commercial worker	-0.0762	-0.147	-0.0898	-0.175
	(0.0973)	(0.222)	(0.0979)	(0.229)
Service worker	-0.0754	-0.240	-0.0606	-0.229

	(0.0844)	(0.193)	(0.0882)	(0.201)
Construction worker	-0.198	-0.484	-0.193	-0.484
	(0.195)	(0.491)	(0.189)	(0.497)
Domestic service worker	-0.304	-0.824	-0.285	-0.802
	(0.255)	(0.603)	(0.240)	(0.611)
Other occupation	-0.158	-0.377	-0.174	-0.427
	(0.123)	(0.271)	(0.127)	(0.281)
Sectors of work unit				
Farm, forest, geological prospecting	0.169	0.362	0.205	0.455
	(0.261)	(0.655)	(0.281)	(0.684)
Manufacturing	-0.0140	-0.0391	-0.0595	-0.171
	(0.0899)	(0.212)	(0.0916)	(0.218)
Constructions	0.0938	0.242	0.0789	0.184
	(0.138)	(0.366)	(0.132)	(0.370)
Social services	0.158***	0.387***	0.105*	0.253*
	(0.0586)	(0.141)	(0.0589)	(0.145)
Health, education, scientific research, government agents	0.313***	0.734***	0.236**	0.581**
	(0.115)	(0.268)	(0.118)	(0.275)
Others sectors	0.0815	0.256	0.0612	0.201
	(0.0777)	(0.181)	(0.0775)	(0.185)
Benefits from work units				
Pension fund (dummy=1 if yes)	0.222*	0.577*	0.223*	0.615*
	(0.126)	(0.319)	(0.133)	(0.331)
Medical insurance (dummy=1 if yes)	0.137	0.315	0.154	0.365
	(0.172)	(0.476)	(0.169)	(0.484)
Unemployment insurance (dummy=1 if yes)	-0.0702	-0.199	-0.110	-0.352
	(0.209)	(0.552)	(0.208)	(0.563)
Housing (dummy=1 if yes)	-0.0507	-0.101	-0.0885	-0.229
	(0.0878)	(0.195)	(0.0874)	(0.202)
City dummies				`
Beijing	------	------	0.106	1.295**
	------	------	(0.228)	(0.548)
Taiyuan	------	------	-0.0315	1.046*
	------	------	(0.256)	(0.565)
Datong	------	------	-0.0191	0.991

	------	------	(0.272)	(0.646)
Shenzhen	------	------	-0.173	0.521
	------	------	(0.186)	(0.565)
Dalian	------	------	------	0.932
	------	------	------	(0.665)
Jinzhou	------	------	-0.0297	0.904
	------	------	(0.209)	(0.613)
Wuxi	------	------	0.0268	0.999*
	------	------	(0.227)	(0.544)
Xuzhou	------	------	-0.148	0.592
	------	------	(0.247)	(0.599)
Hefei	------	------	-0.151	0.517
	------	------	(0.235)	(0.561)
Wuhu	------	------	-0.117	0.608
	------	------	(0.243)	(0.597)
Bozhou	------	------	-0.169	0.493
	------	------	(0.259)	(0.606)
Zhengzhou	------	------	-0.183	0.536
	------	------	(0.236)	(0.550)
Kaifeng	------	------	-0.245	0.413
	------	------	(0.253)	(0.594)
Pingdingshan	------	------	0.300	1.914***
	------	------	(0.268)	(0.624)
Wuhan	------	------	-0.0320	0.936
	------	------	(0.236)	(0.571)
Yichang	------	------	-0.252	0.387
	------	------	(0.247)	(0.583)
Xianning	------	------	------	------
	------	------	------	------
Guangzhou	------	------	0.0222	1.094*
	------	------	(0.231)	(0.559)
Zhanjiang	------	------	-0.285	0.408
	------	------	(0.257)	(0.597)
Zhaoqing	------	------	0.00892	0.973
	------	------	(0.243)	(0.609)

Chongqing	------	------	-0.420*	-0.141
	------	------	(0.250)	(0.581)
Chengdu	------	------	0.0420	1.113*
	------	------	(0.245)	(0.585)
Nanchong	------	------	-0.199	0.492
	------	------	(0.272)	(0.624)
Kunming	------	------	-0.416*	0.0846
	------	------	(0.244)	(0.564)
Honghe Hani Li Autonomy	------	------	-0.381	0.0837
	------	------	(0.267)	(0.622)
Lanzhou	------	------	0.0740	1.241***
	------	------	(0.258)	(0.396)
Huixian	------	------	-0.416	------
	------	------	(0.283)	------
Constant	3.172***	------	3.506***	------
	(0.467)	------	(0.505)	------
Observations	1,471	1,471	1,471	1,471
F(58, 1412)/ F(83, 1387)	1.88	------	2.10	------
Log likelihood	------	-1728.9123	------	-1698.3376
LR chi2 (58)/LR chi2 (83)	------	108.76	------	167.90
Prob > F/ Prob>chi2	0.0001	0.0001	0.0000	0.0000
R-squared/ Pseudo R2	0.070	0.0305	0.105	0.0476

(Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1)

(Note: The city dummies Dalian and Xianning in Model 6 were omitted by Stata; the city dummies Xianning and Huixian in Model 7 were also omitted by Stata)

Appendix 5: Results of diagnostic tests

	Model 1	Model 2	Model 4	Model 6
Test for Multi-collinearity (VIF)	2.24	2.10	2.10	3.28
Test for omitted variables	0.3709	0.2416	0.1157	0.2481
Test for heteroskedasticity	0.0830	0.0334	0.0234	0.0603