Gender Wage Inequality in the Urban Chinese Labour Market

Abstract

This thesis presents an analysis of the gender earnings gap in urban China. The focus is on the impacts of human capital, family circumstances, social and political capital, occupation, ownership sector, industrial sector, and geographic locations on the gender wage gap. Fixed and random effects regression techniques are applied to analyse the November 2001 to January 2002 cross-section of the CULS dataset. Our findings indicate that the gender earnings gap in China was remarkable in 2001, when women made only 78.57% of men's earnings. This gap persists after controlling for individual, industry, and city level characteristics: women now make about 16 to 20% less than men do. The size of earnings in urban China is highly dependent on individual and industry level characteristics. It is positively affected by work experience, educational level, health status, marriage, social capital, and CCP (Chinese Communist Party) membership. And it varies with and within occupations, ownership sectors, industrial sectors, and geographic locations. Except for two: marital status and administrator, gender wage differentials are not identified in other variables, indicating that rather than different income returns due to individual and industrial level characteristics, disproportionate allocation of men and women in those variables is the major force behind the earnings gap. Family circumstance is another critical part of the story of gender differences in income, where gaps are concentrated among married women, especially mothers. It is also the primary contributor of the vicious cycle against women, which has been proved to exist in the Chinese labour market. Although inter-regional income disparities are significant, they are not associated with a city-level gender effect on income. Net of controls, the gender gap in income remains constant among cities of different income and economic development level. At last, by controlling all of these variables, the gender gap in wages is still statistically significant, which demonstrates that discrimination also plays a role in this issue.

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Section 1: Introduction

here is a gender wage gap worldwide (Morrison, Raju, & Sinha, 2007, p. 14; Petersen, Snartland, & Milgrom, 2005; The World Bank, 2001). There are, however, questions concerning its causes. Numerous approaches have been used to study gender wage inequality. Some studies rely on individual level data to document the gender wage gap net of human capital, political capital, family circumstances, and other productivity related factors, attributing the residual difference in wages to discrimination (Darity & Mason, 1998; Shu & Bian, 2002; Y. Zhang, Hannum, & Wang, 2008). Several studies have examined gender earnings differentials across different sectors in the post-reform Chinese labour market and found that the male-female earnings gap was higher in the new sector (including private and foreign joint sectors) than in the state-owned and collective sectors (Dong & Bowles, 2002; W. Liu, Meng, & Zhang, 2000; Shu, 2005; Shu & Bian, 2003). Others focus on the demographic composition of contextual units, such as jobs and occupations, linking average pay rates to the percentage of women in the job unit (Huffman & Velasco, 1997; Jones, 1983).

In the traditional Confucian structure, women were subordinate to men, and young women occupied the lowest stratum of the hierarchy. Although it has been challenged by massive efforts made by the Chinese Communist Government, gender hierarchy persists in China: the average educational attainment increased for both genders and the gap experienced a continued decline, but it still favours men; childrearing, elder care, and other family obligations are still the primary responsibility of the female parent; the gender gap in political capital is still significant, though the gap decreases over time; and female workers are still concentrated in female-stereotyped occupations and industries.

Before the market reforms, the purpose of employment policies was to guarantee full employment and equal wages for men and women. As a consequence, men and women were entitled to, and provided with a lifetime job and a wide range of social services and goods by the Government. Although the public-sector (state-owned and collective-owned enterprise) dominated the Chinese economy in the period, managers of the public-sector had no right to hire and fire workers and decide on wage rates.

Since the wage rates did not reflect differences in individual characteristics and efforts of employees, the gender wage gap in urban China was relatively small and did not change much from the early 1950s to the late 1970s.

China embarked on the transformation from a centrally planned to a market economy in 1978, which can be divided into two reform periods: a moderate phase (from 1978 to the early 1990s) and a radical phase (since the early 1990s) (Ding, Dong, & Li, 2009; Dong, Berik, & Summerfield, 2007; J. Liu, 2007). The reform has brought many important changes to employment. The most notable changes include the replacement of the administrative employment system with a competitive labour market system; the privatisation of the public-sector; and the emergence of the private sector. As a consequence, the non-public-sector expanded rapidly and became the dominate players in output and labour markets; people can make their own decisions on employment; and the profit motive became a major feature in their decision-making.

These changes have stimulated a great research interest in their implications for gender wage inequality. On the one hand, neo-classical theories suggest that returns to human capital and occupation would increase as the employment system rewards productivity more efficiently (Cao & Nee, 2005; Shu, 2005; Shu & Bian, 2003), and family responsibilities (especially childrearing) would be negatively affected it. On the other hand, past inequalities in access to education, unequal access to political capital, and disproportionate allocation of family distribution between genders place women at a disadvantage in a system that increasingly rewards human capital, and somehow still rewards political capital. Furthermore, privatisation and the profit motive could create incentives for discrimination against women, because of the assumption that heavy family responsibilities make them less productive. These changes, thus could influence personal decisions on capital accumulation, occupation and industry choices, and affect employer's discrimination of women, which may create a vicious cycle against them. For example, times spend out of the labour market for childbearing, childrearing, elder care and other family obligations bring women many disadvantages in the labour market, such as more frequent job interruptions, less energy for work, less reliability to work, shorter working life, etc. These characteristics cause them to be more likely to seek jobs and occupations with greater non-pecuniary (mother-friendly) amenities and lower depreciation of human capital,

such jobs are often associated with lower wage rates, fewer chances to accumulate experiences, on-the-job training (OJT), and social and political capital. On the other side, it confirms and enhances employer's discrimination of women workers and hence they provide them with even fewer job opportunities, OJT, and promotion on the job ladder. As a consequence, females receive less returns to personal capital, thus, their motivation on gaining human capital is reduced. Less human capital reduces the opportunity cost of non-paid household work, thus, reinforces women's family responsibility, causing a vicious cycle against female workers.

Human capital has always been considered one of the major causes of gender disparities in the labour market (Blau, Ferber, & Winkler, 2006; Y. Zhang, et al., 2008). Several empirical studies show that women are significantly disadvantaged by various measures of human capital, which include educational attainment, on-the-job training, work experiences, etc, and these disadvantages significantly explained the observed gender gaps in employment status and earnings over time and across space in urban China (Bian, Logan, & Shu, 2000; Shu & Bian, 2003; Y. Zhang, et al., 2008). Moreover, although the relationship between personal health and earnings is little studied, it is a valuable topic to discuss. In accordance with the World Health Organisation (WHO) (2009), opportunities for paid employment is one of the identified determinants of health that is a major component in the Human Development Index, the Gender-related Development Index, and the Physical Quality of Life Index. Hence, it is worth debating the antithesis to the proposition of the WHO: does the outstanding gender inequality in health have intrinsic effects on gender earnings in urban China?

For biological, cultural and social reasons, family work, elder-care, and childrearing have been the primary responsibility of the female, thus, women have less attainment of human, social and political capital. Women's greater household responsibilities over men are often enhanced by marriage. A study shows that once a couple marries, they can become a gender specialised household, with small initial differences motivating later differences based on incentives for family income or satisfaction maximisation (G. S. Becker, 1991). As a consequence, males typically specialise in market work and the female in household work because the husband is expected to have a comparative advantage over the wife in paid work and the characteristics of females make them more productive in non-market work, producing a more

pronounced difference between males and females in paid employment and earnings (Kaufman & Hotchkiss, 2003; Lippe, 1992). In addition to marriage, motherhood has similar effects on women's family responsibility. Studies that include child care as a category in family work show that childrearing increases women's overall household work much more than men's (Brink & Groot, 1997; England, 2005), and some studies even conclude that children have no effect on a male's home time at all (Lippe, 1992; Millimet, 2000). However, scholars argue that although children have increased the value and importance of household work (including both family and childrearing responsibilities), it just influences the trade off between household and other market and non-market work. The mother's reservation wage and the marginal value of market and non-market work, on the other hand, have not been influenced (Brink & Groot, 1997; Millimet, 2000). In contrast, others predict a negative effect of children on female wages (G. S. Becker, 1985; Budig & England, 2001; Lundberg & Rose, 2000; Waldfogel, 1997a), though the penalty of children on the mother's wage varies among studies since they apply different models and equations.

There are various beneficial effects in the labour market attributed to social and political capital, including better access to and exchange of information, decreased transaction costs, enhanced enforcement of contracts, increased efficiency, improved trust, and so on (Beugelsdijk & Smulders, 2003; Knight & Yueh, 2002). Social and political capital was found to be positively associated with earnings and other career-related issues. Among them are the job ladder, job tenure, working conditions, job search, re-employment, and expressive returns (for example, better mental health, more happiness) (Growiec & Growiec, 2010; Lin, 2000; Parks-Yancy, 2006). Turning especially to the Chinese labour market, women have considerable less social capital than men, indicating a serious gender social capital inequality (Lin, 2001). In addition, Chinese men and women also show distinct perspectives on the use of social capital after they earn access to social connections. Males use their social connections mainly for job search and upward mobility (Bian, 1994b); by contrast, women normally use their connections for the purpose of avoiding shift work and smoothing the relationship between work and family duties (J. Liu, 2007). Given the importance of the CCP in China's society, access to membership is one of the most promising indicators of social capital. The positive relationship between Party membership and wages is well known. In pre-reform China, Party members were significantly more

likely than non-members to be promoted to positions of authority, to receive party sponsorship for further education and job training, and to receive high wage and in-kind incomes (Knight & Yueh, 2002; Shu & Bian, 2003). The impact of Communist Party membership on labour market earnings attainment during the reforms, however, is less consistent from one study to another. In addition to the earnings return to the CCP membership, the disproportionate allocation of Party membership between men and women is another major issue. In the 1980s and 1990s, 15% to 20% of the working adults in urban China were CCP members and the male to female ratio was as large as 2:1 (Shu & Bian, 2003).

Because of the inequality in income returns and disproportionate allocation of human capital, family responsibility, and social and political capital between men and women, they choose different fields for work. As the consequence, women are generally segregated into low-paying industries and occupations, which is often regarded as the most direct source of the gender earnings gap (England, 1992; Marini & Fan, 1997; Y. Zhang, et al., 2008). This institutional perspective emphasises the effect of a gendered labour market, pointing to differing reward structures for male- and female-type jobs. According to Huffman and Velasco (1997), Liu, Meng and Zhang (2000), England (1992), and Yoder (1991), average earnings are lower in female-dominated sectors and industries, and both men and women are paid less in predominantly female sectors and industries. Although there is variation, occupations that men and women dominate are quite similar across affluent nations (Charles & Grusky, 2004). In addition to the unequal distribution of men and women among occupations, within-occupation gender disparity on the job hierarchical level is another substantial factor that contributes to the gender earnings differential. Many empirical studies found that women face a glass ceiling or a group of barriers that obstruct their movement to the upper hierarchy within occupations (Doeringer & Piore, 1985; Shu, 2005; Winter-Ebmer & Sweimuller, 1992).

Discrimination means individuals or groups of individuals being treated unequally and unfairly (Kaufman & Hotchkiss, 2003). In the labour market, it is defined as treating equally productive workers differently (England, 2005). A number of empirical studies have investigated wage discrimination against women in China based on forms of ownership, degree of marketisation, occupational segregation, promotions and job ladders, and so on (Bian & Logan, 1996a; Cai, Du, & Wang, 2005; Shu, 2005; Shu &

Bian, 2003; Shu, Zhu, & Zhang, 2007; M. Wang & Cai, 2008; Y. Zhang, et al., 2008). Findings indicate that the existing gender earnings gap in urban China arises from both personal capital difference (such as human capital, social capital, and political capital) and discrimination, and the gender discrimination grew during the economic reform period, especially in its radical transition phase. In particular, Wang and Cai (2008) argue that lower wages for women lie primarily in unequal pay within sectors; 94 percent of the total gender earnings difference is contributed by the intra-sector wage gap; and 86 percent of within-sector gender wage differentials cannot be explained by human capital, marital status, and health status. By contrast, the inter-sector gap accounts for only 6 percent of the difference of which 61 percent remains unexplained (independent of human capital, marital status, and health status). Overall, 84 percent of the total gender earnings differential remains unexplained. Based on Wang and Cai (2008), one could conclude that the pure wage discrimination is a serious problem in the Chinese labour market, and it is mainly attributable to inter-sector differentials. However, by controlling for more independent variables, such as social and political capital, industry sector, ownership, and occupational position, the degree of pure wage discrimination is expected to be much smaller than the one identified by Wang and Cai.

In addition to the micro-level, economic reforms also caused and enlarged inter-regional disparity, as the south-east-coastal region experienced much greater increase ~~rate on~~ in income and economic development than other regions in the period. This geographically biased economic reform continued to benefit China's major regions unequally, widening the income gap between coastal and other regions (Ho & Li, 2009; Huang, Kuo, & Kao, 2003; Q. Li, 1999). In particular, the average provincial annual growth rate per capita GDP in the reform period (1978-1997) was twice as high as that in the pre-reform period (1952-1977). In the reform period, per capita GDP grew at 9.09% per annum for all regions of China, and at 10.88% per annum for the coastal provinces. Except for Shanghai, coastal provinces held the highest growth rate in GDP per capita in this period (Q. Li, 1999). The regional wage rate differential, however, also arose from other reasons, some of them related to population variables, such as city size. Since 1967, the relationship between income inequality and city size has received particular attention from economists. The relationship can be rationalised by the fact that both city size and inequality are related to the level of income. Many

studies have documented that wages in economically developed regions exceed those in undeveloped areas, and wage rates rise with city size (Baum-Snow & Pavan, 2009; Echeverri-Carroll & Ayala, 2011; Segal, 1976; Soroka, 1983). Nevertheless, some scholars believe that the effect of city size on wage rate is much smaller than that of the region (Huang, et al., 2003; Soroka, 1983), and others believe that an unbalanced income rate and economic development level are not associated with gender wage differentials among regions in China (Shu & Bian, 2002; Shu, et al., 2007).

Against this background, this paper seeks to answer the following questions: (1) How much cans the gender earnings differential can be explained by individual and city-industry level indicators (refer to next paragraph)? (2) Is the gender earnings gap majorly caused by various income returns to those variables or disproportionate allocation/distribution of them? [Can you formulate this in a clearer way?] (3) Does the vicious cycle against women exist in China? And (4) Does the inter-regional disparity contribute to the gender earnings differential among different regions?

To answer those questions, this paper applied fixed and random effects regression techniques to investigate the magnitude of gender earnings differentials and the possible explanations for the gap by evaluating potential contributions of a full set of individual and city-industry level indicators by using the China Urban Labour Survey that was collected in 2001. At the individual level, various characteristics could contribute to the observed gender wage gaps, including human capital, family circumstances, social and political capital, and occupation. At the city-industry level, this paper examines gender earnings differentials across ownership sector, industrial sector, and geographic locations. Although they do not exhaust all sources of labour market inequality, they are the most common and important aspects of work status for women and men as established by gender and work literature and by research on Chinese social stratification (Darity & Mason, 1998; Shu & Bian, 2002; Y. Zhang, et al., 2008). Although both individual and city-industry inequality contribute to the overall gender wage gap, empirical researchesoften focuses on one source at the expense of the other (eg: Huffman & Velasco, 1997; Y. Zhang, et al., 2008). By contrast, my equation allows me to offer an analysis of the effects of all above mentioned components of the gender wage gap.

The rest of the thesis is organized as follows. Part 2 investigates and analyses relative empirical studies on the gender earnings issue. It contains seven sections which include: China's economic transformation, human capital, family circumstances, social and political capital, region and city size, industry and occupation, and discrimination. Part 3 presents preliminary data description and analysis, showing sectoral and regional distributions of labour force and differences in personal (individual level) characteristics between male and female workers. Followed by a conclusion and policy implications in the last section.

Section 2: Literature Review

2.1: Background: Economic Transformation and Its Effects on the Labour Market in Urban China

China embarked on the transformation from a centrally planned to a market economy in 1978. This transformation process was accelerated by Deng Xiaoping's famous southern tour in 1992 and China's entry into the WTO in 2001. Hence, China's market transformation can be divided into two reform periods: a moderate phase (from 1978 to the early 1990s) and a radical phase (since the early 1990s) (Ding, et al., 2009; Dong, et al., 2007; J. Liu, 2007). The aims of transformation are clear: to increase efficiency and improve standards of living. In an effort to achieve those goals, China has undertaken extensive reforms: state owned enterprise (SOE) reforms, macro level policies to encourage foreign direct investment (FDI) and trade liberalisation, promotion of township and village enterprises (TVE), and de-collectivisation and land tenure reforms in the agriculture sector (Dong, et al., 2007; J. Liu, 2007).

While there is no doubt that China's economic transitions have been successful in macroeconomic terms and unique in many ways, they have brought difficulties as well. Many of these are associated with gender inequality, such difficulties including disproportionate layoffs and urban unemployment for women caused by the dismantling of SOE, rising gender disparities in wage employment, adoption of commoditised beauty standards, declining access to social goods and services, that hurt women more heavily than men (Dong, et al., 2007; J. Liu, 2007; Shu & Bian, 2003). Other difficulties are related to regional economic disparities. Economic development was concentrated on coastal, especially south-east coastal regions during the economic reform, causing considerable regional inequality in economic development between those and other regions, and undoubtedly, leading to unequal earning rates between them. In this thesis, I discuss the changing patterns of employment and income in post-reform urban China through a gender lens; more importantly, we will study the effects of those patterns on the equality of gender income in post-reform urban China.

Pre-reform Phase

Before the reforms, state-owned enterprises were the major employers and providers of social benefit and services in urban China. They guaranteed lifetime employment, and a wide range of essential social services and goods such as subsidised housing, education, maternity leave, childcare, healthcare, and retirement pensions (Ding, et al., 2009; J. Liu, 2007). Under the centrally planned system and the official policy of equal pay for equal work, by the early 1980s most working-age women were employed in full-time jobs in urban China, earning more than 80 percent of male pay, a gender wage gap remarkably small by international standards (Ding, et al., 2009; Gustafsson & Li, 2000).

Moderate Phase

With the aim of protecting urban workers from the massive open unemployment that had plagued many central and eastern European countries, China applied its market reform gradually from 1978 to the early 1990s. During this moderate reform phase, China sought reform within the socialist system, widely appraised as "a reform with no losers". Rather than destroying these existing features of the socialist system, the reforms sought to improve the efficiency of the central planning system and public sectors by restructuring the incentives of workers and managers and enhancing the role of markets (Lau, Qian, & Roland, 2001; Naughton, 1996). In 1986, the Chinese State Council introduced a new labour contract system that required SOEs to put all new employees on fixed-term and renewable contract, rather than on the existing lifetime contract (Tan, 1994). Furthermore, SOEs were required (by State Council) to identify the skill level of their employees through assessments or examinations, and transfer them to the most suitable position based on their skill level. Those workers with poor or no skills became surplus labour (Gong, 2002). In this early round of reforms, many surplus workers were transferred to the auxiliary or service sectors of their danwei (SOE) and other surplus workers were asked to stay at home with reduced wages and subsidies (known as 'daigang' or literally 'waiting for post'), because the managers of SOE were still not allowed to completely lay off workers until 1992 (Dong, et al., 2007; J. Liu, 2007). Women were disproportionately affected by those market transformations. Jacka's (1990) study on a 1987 survey by the

national trade union in 660 enterprises in 11 provinces showed that women accounted for 64 percent of excess workers in urban China. On the other hand, women's formal employment rate in urban China experienced steady and continual increases from 32.9 percent in 1978 to 39.4 percent in 1995. Rapidly increased opportunities in privately owned enterprises, foreign owned enterprises, foreign joint ventures, and the self-employment sector are the main drivers of the higher employment ratio (Ding, et al., 2009; Summerfield, 1994). With respect to gender earnings differential, research shows that the female to male earnings ratio decreased mildly from 0.84 in 1988 to 0.82 in 1995 (Gustafsson & Li, 2000). Looking behind those figures, we seek the causes of those changes in this thesis,

Although the enterprise reforms in the moderate phase are aimed to reorganise and enhance the efficiency of state-owned enterprises, SOEs were still running behind non state-owned enterprises in terms of efficiency and profit. Empirical studies show that the profits of SOEs continued to decline during the moderate reforms phase, and two-thirds were operating in the red by 1992 (Gong, 2002). Furthermore, about a quarter to a half of SOEs were losing money between 1988 and 1995 (Ding, et al., 2009). In addition to direct financial losses, inefficiency in the SOEs also threatened the stability of China's financial system as the Chinese Government had to provide huge financial subsidies to those inefficient SOEs to keep them alive. According to official statistics, on average, subsidies to those SOEs cost 14 percent of China's state fiscal revenue during the period 1988 to 1995 (China's National Bureau of Statistics, 2001). Clearly, the inability of SOEs to adjust to the explosive emergence of surplus labour and their un-shrinkable responsibility for social services and goods provision for all employees (including those 'daigang' workers) are the two key causes of this phenomenon (Ding, et al., 2009; J. Liu, 2007). The former drastically reduced enterprises' efficiency and the latter brought huge financial burdens onto SOEs.

Radical Phase

As we described above, the Chinese leadership sought reform within the socialist system and 'a reform with no losers' in the early period of transition. The reform was successful in terms of protecting urban workers from massive open unemployment; however, it failed to effectively improve the efficiency of SOEs. Many could not

compete with non-state enterprise in the open market, and they brought huge financial burden to the Chinese Government. Thus, after Deng Xiaoping's famous southern tour in 1992, the Government formally endorsed the fully-fledged march towards Socialist market economy (Dong, et al., 2007).

First of all, in order to improve competitiveness of state-run enterprises, the Government formally endorsed layoffs or 'xiagang' (literally 'leaving the post') within SOEs in 1992. Furthermore, private-property rights and ownership reforms initiated in public enterprises were endorsed in the same year. As a result, a number of SOEs were merged, sold to non-state enterprises, or declared bankrupt (Dong, et al., 2007; J. Liu, 2007). With this first step towards Socialist market economy, China adopted a relatively gradual approach to restructuring, and hence, the scale of redundancy was relatively small within this period.

In 1994, the government started to push the restructuring policy forward. More small and medium size loss-marketing SOEs were merged or bankrupted, but large state-run enterprises were still under the protection of the Government under the name 'reorganising in the strategic sector'. In addition, a new labour law issued in 1994 required SOEs to put all employees on fixed-term (and renewable) contract and sanctioned the right of employers to dismiss workers in state-run enterprises. Thus the lifetime employment system in SOEs that had dominated the Maoist era was ended (Ding, et al., 2009; C. K. Lee, 2005).

In 1997, the Government adopted several aggressive restructuring programs in an attempt to revitalise the ailing SOE sector. The main programs included requiring SOEs to shift to modern forms of corporate governance, and the merging and shutting down of unprofitable SOEs. Most importantly, a large-scale labour retrenchment program was launched by the Government, causing nearly thirty million SOEs workers to be laid off[1] between 1998 and 2002 (John, Park, & Cai, 2006; J. Liu, 2007).

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[1] Unlike the definition used in western countries, laid-off workers in urban china are employees who left enterprises and go home due to downsizing of SOEs or collective-owned enterprises but they still maintain nominal labour relations with their work units. China's laid-off workers do not register themselves as unemployed. Most enterprises pay their laid-off employees monthly stipends. Some also provide training and reemployment programs.

China's willingness to seek membership in the WTO was another core drive of its market transition. It accelerated China's steps toward integration with the global economy, forcing China to reduce financial subsidies to SOEs and expose them to more fundamental market discipline; accelerated China's steps on SOE's restructuring; etc. (Bajona & Chu, 2004; Ding, et al., 2009). As a consequence, many state enterprises were merged, privatised, and bankrupted in this period, causing millions of state workers to be displaced through extended maternity leave, internal or in-house retirement, bought-out retirement, or layoffs (J. Liu, 2007).

According to official statistics, while the labour market share of public-sector (state-owned and collective-owned enterprises) dropped drastically from 81.2 percent in 1992 to 33.4 percent in 2002 (China's National Bureau of Statistics, 2005a), the urban unemployment rate, on the other hand, increased significantly from 8 percent in 1989 to 17 percent in 2002 (X. Meng, 2004). With respect to Government spending, public sector restructuring helped to release China from the huge financial burden of SOEs. Official statistics show that the share of subsidies paid to SOEs as total fiscal revenues went down from 12.8 percent in 1992 to 1.37 percent in 2002 (China's National Bureau of Statistics, 2001).

In addition to 'institutional unemployment' (unemployment generated by the diminishing roles of public sector), 'structural unemployment' is the other major cause for the massive redundancy during China's market transformation. Song (2003) argues that many people lost their jobs in one sector and had to find new jobs in other sectors during China's economic structural changes. For example, the employment shares of the service sector more than doubled from 1978 to 1998 while agricultural and manufacturing sectors experienced a dramatic decline in employment shares (S. Song, 2003). However, first of all, job transfer takes time and causes frictional unemployment (S. Song, 2003). Furthermore, as we will show in this thesis, many redundant workers, especially for older women who belong to the Cultural Revolution cohort and those married to low-earning husbands are almost without any prospect of being rehired in other sectors, thus contributing heavily to redundancy (J. Liu, 2007; X. Meng, 2004).

To conclude, economic transformation in China has bought many important changes to employment; most notably, the socialist job placement system was replaced by a

competitive labour market system, privatisation of SOEs, emergence of private and foreign sectors, and the wholesale appearance of profit motive as an organising feature in personnel decision making.

The effects of economic reforms on women

From a gender perspective, in the moderate phase of transition, public enterprises that were job security guarantors and social services providers remained intact in the urban China labour market, cushioning workers against massive open unemployment and minimising the gender impact of market transition. Arguments on the gendered impacts of the radical SOE restructuring beginning in the early 1990s are less controversial. Briefly, the reform strategies in urban China in the radical transition phase bear a resemblance to the policies adopted in the moderate phase. They were formulated "based on hidden assumptions that conform to the traditional sex division of labour and failed to acknowledge women's roles in social reproduction" (Ding, et al., 2009, p. 168). However, market reforms since the early 1990s destroyed the institutional mechanisms that protected workers in general and women in particular under socialism. Thus it is not surprising that most relevant studies document consistently that women, especially married women, have borne a disproportionate share of the costs of public sector reforms in this gender insensitive reform strategy that emphasised production efficiency and overlooked women's roles in social reproduction. Indeed, they have been laid off at a higher rate than men, experienced greater difficulty in finding re-employment in the private sector, swelled the precarious informal employment, and decreased the share of their earnings in the household (John, et al., 2006; J. Liu, 2007; Xianfan Meng, 1995; S. Song, 2003; Summerfield, 1994; Z. Wu, 2001; G. Yang, 1999).

Since 1992, an increasing number of former SOE employees were thrown out of their work units because of rapid SOE reforms. Although exact statistics are not available, several studies have shown that laid-off SOE workers grew from about 3 million in 1993 to 5.6 million in 1995, further increased to 11.7 million in 1999 (S. Song, 2003), and this number was as high as 60 million by the end of 2004 (Solinger, 2006). It is generally accepted that females comprised about 60 percent of those laid-off workers in the 1990s, though they are a minority (about 40 percent) of the total workforce in

urban China (Xianfan Meng, 1995; Rosenthal, 1998; Summerfield, 1994; Z. Wu, 2001; G. Yang, 1999). Many recent studies have concluded that being female, middle-aged, of low educational level, and working in the secondary industry (manufacturing sectors) increased the chance of losing one's job (see 'human capital' section). Song (2003) has expanded the characteristics of China's urban layoff and unemployment to seven factors, the additional characteristics being: SOE employees are more vulnerable to layoff and unemployment; incidence of urban layoff varies across regions; and relatively longer unemployment duration for urban registered unemployed workers. However, and more importantly, what are the causes of those characteristics?

The major changes bought by the economic transformation in China, can be grouped into two categories: privatisation and profit motive. From one perspective, privatisation and profit motive create incentives to base employment decisions on proxies for productivity, such as human capital and political capital (Y. Zhang, et al., 2008). The system increasingly rewards human capital and, by many estimates, still rewards political connections during the reforms. However, the traditional male breadwinner bias: "men dominate the outside while women dominate the inside" causes inequities in access to human capital and political connections for women, thus placing them at a disadvantaged position in the system (P. Li, Zhang, & Zhao, 2000). On the other hand, privatisation and the profit motive create incentives for discrimination against women, because the traditional male breadwinner bias induces employers to believe that women's family responsibilities and maternity leave make them less productive than male workers (Y. Zhang, et al., 2008). Tan (1994) has proved that since 1992, females were heavily hit by the extended maternity leave, which results in making women redundant. In this section, we briefly discuss the changing patterns of China's urban employment and earnings from both demand and supply sides, and analyse their impacts on income inequality between genders.

Feminist economists and macroeconomic policies

Conventional economists evaluate transition reforms and structural adjustment based on economic outcomes by focusing on consumers, workers, and households. By contrast, feminist economists consider economic processes as much as the outcomes and they differentiate processes and outcomes by gender, age, ethnicity, and class

(Dong, et al., 2007; Elson, 1999). Furthermore, since feminist economists are concerned with the totality of activities necessary for the provisioning of human beings, they are interested in unpaid activities as well, especially the interconnections between unpaid and paid activities that conventional economists consider 'economic' (Elson & Cagatay, 2000; Sen, 1999). In addition, feminists evaluate the success of economic policies in terms of changes in individual entitlements, capabilities, and agency. Hence, rather than economic outcome itself, to what extent the outcomes enhance people's abilities to lead better lives and the fairness, importance, and explicitly ethical consequences of the outcomes are another concentration of feminist economists (Dong, et al., 2007).

Despite macroeconomic policies being gender-neutral as they address women's needs only to the extent to which they conform to traditional gender norms (Beneria, 2003), empirical evidence from the structural adjustment of China and theoretical studies on this subject have shown that women are more likely to suffer disadvantages from the neoliberal economic restructuring because of 3 biases in macroeconomic policies (Elson & Cagatay, 2000; J. Liu, 2007; Seguino & Grown, 2006). The macroeconomic policies themselves, as discussed, have a deflationary bias resulting from government budget cuts and commodification bias. As the third bias, the male breadwinner bias in wage employment is the extension of the previous two in an institutional context (Elson & Cagatay, 2000). As a result, gender biases in China tend to be enforced and women face greater barriers compared with men. It is thus seen that, women are more vulnerable to layoff and unemployment, usually have more difficulties on re-employment, and have poorer access to social safety nets.

2.2: Human Capital

Educational Attainment

Human capital, as a key component of personal productivity, has been considered one of the major causes of gender disparities in the labour market (Blau, et al., 2006; Y. Zhang, et al., 2008). Several empirical studies show that women are significantly disadvantaged by various measures of human capital, and this disadvantage explains part of the observed gender gaps in employment status and earnings over time and across space in urban China (Bian, et al., 2000; Shu & Bian, 2003; Y. Zhang, et al., 2008). In this thesis, four variables were used to measure human capital: experiences, education, on-the-job training and health status. Since many empirical studies have found that the economic returns to schooling and the relative wage of college and higher education versus high school and secondary technical school graduates have increased over time in China since the late 1980s (Bauer, Wang, Riley, & Zhao, 1992; H. Li, 2002; Ye, 2008; J. Zhang, Zhao, Park, & Song, 2005), indentifying the degree, trend, and causes of the gender gap in education attainment becomes important. Moreover, to the knowledge of the author, the relationship between personal health and hourly earnings has never been studied with respect to the urban Chinese labour market. However, health, as included in the Human Development Index, the Gender-related Development Index, and the Physical Quality of Life Index, should be considered a basic element of human capital. Hence, indentifying the effects of health on hourly earnings in the Chinese labour market is one major task of this thesis.

Traditional Confucian attitudes and norms strongly supported and reflected a hierarchical structure based mainly on gender and age, both within and outside the family (Internet Encyclopedia of Philosophy, n.d.). In this structure, women were subordinate to men, and young women occupied the lowest stratum of the hierarchy. As founders of the People's Republic of China promised, the Chinese Government tried to raise the status of women in many ways since 1949, such as freeing the entry of women into the paid labour force, because Chinese leaders and other Marxists believed that women's participation in the labour market to be the key to the liberation of women (Landes, 1989); and changing the role of women in the family by implementing marriage laws in 1950 and 1980 to give men and women equal rights to marriage and divorce (Bauer, et al., 1992). Although the hierarchical structure has

been challenged by massive efforts made by the Chinese Communist Government, gender hierarchy persists in China. For example, sons continued to be preferred over daughters in most of China (Arnold & Zhaoxiang, 1986; M. D. Gupta, et al., 2003); many Chinese women are in a "double burden" condition, because childrearing, elder care, and other household work are the major responsibility of female parent even though the woman is in full time employment (Bian, 1987); and lack of representation of Chinese women in political affairs (Perry & Selden, 2010; Whyte, 1984). With respect to education and the labour force issue, both men and women benefit from dramatic improvements in education, especially after the economic reform that was launched in the late 1970s. However, women do benefit more than men from these improvements as the gender education gap is diminishing over time (Chart 2.2.1-2.2.3).

Using survey data of 1,040 eighth graders in China in 1998-1999, a recent study found that intra-family discrimination against girls on education access was still common in contemporary rural families with more than one child, and in families of pre one-child generations, but no gender discrimination on education access was found in families in modern urban China (Tsui & Rich, 2002). One may ask, what causes parental expectation and investment differences in children's education? Long-term factors associated with family background are the first explanation for this question. Bauer, Wang, Riley and Zhao (1992) and Li (2007) demonstrated that although there may be notable mobility in China, the enrolment status of children is significantly influenced by parent education and occupation. The effects, however, vary by gender, and favour men over women because of the effects of Confucian norms. Also, the gender inequality is smaller in households with higher-educated parents. For instance, a son has much greater probability for school enrolment than a daughter, and a professor's daughter than a farmer's daughter (Bauer, et al., 1992). Given that the average educational attainment in urban areas is higher than that of rural areas (Qu & Zhao, 2008), one may conclude that children in modern urban families are more likely to be promoted education access than rural children. This difference was further enlarged by the differing financial burden between urban and rural families, and between those with one or more than one child.

In accordance with several recent studies, in addition to these long-term factors associated with family background (such as parent's educational attainment), short-

term family financial barriers are also having significant effects on higher education access, but to a lesser degree (Carneiro & Heckman, 2002; W. Li, 2007; W. Li & Min, 2003). Given the reverse relationship between family income and education access, families with more than one child may face financial barriers in sending all children to higher education, especially for rural families because of their lower average income (Qu & Zhao, 2008). Under the effects of Confucian norms, education access, thus, was deprived away from girls to give way to sons.

Thirdly, the one-child policy has had the unintended consequence of the investing of more resources in the education of 'only' children in the Chinese urban community. With the traditional Confucian attitudes that stress the importance of both education and the family welfare system, investing in the education of the single child who will be the only person responsible for parent/grandparent care is extremely important, especially in today's China where the government-provided old age security system is still poor. The only child's academic success is the major concern of the Chinese family, because it contributes to the future success of career[2] (Tsui & Rich, 2002). However, although the one-child policy was initially announced in 1979 and appears to have substantially reduced fertility rates, strict adherence to it is lower in rural than in urban areas (Fang, Eggleston, Rizzo, & Zeckhauser, 2010; Rosenzweig & Zhang, 2009). Two leading reasons for differing implementations of the one-child policy in rural China are: children, especially sons are valued for contributing to farm labour (Schultz & Paul, 1995); and for providing parents with old-age security since social security system and pensions system are very poor (Hussain, 1994). Thus, it is clear that modern urban families often associated with higher parent educational attainment, higher income, and a higher proportion of single children, have no (or less) gender discrimination in education access. As a consequence, the average educational attainment and gender inequality in education are respectively higher and lower in the urban areas, ceteris paribus, leading a greater overall wages rate and smaller gender wages gap there. The greater gender equality in modern urban families with one child, as Tsui & Rich (2002) suggested, is an unintended consequence of the one-child policy.

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[2]Furthermore, Tsui and Rich have also discussed the effects of family structure on the academic achievement of children. They found that the number of siblings in the household negatively associated with children's academic achievement. However, it is not in the analytic interest of this thesis, see (Tsui & Rich, 2002, pp. 76-78) for discussion on this issue

Bian et al. (2000) note that in the change from first to current job, women's slower wage growth is attributable in part to their lower rates of college education. Moreover, educational differences play a primary role in gender differences as to whether individuals are employed at all. Hannum et al. (2008) and Maurer-Fazio (2007) have developed the latter discussion in more depth: the more education a worker has, the better the chance of being employed and re-employed, and the better protection against layoff. In fact, educational attainment is often cited as a major factor in producing gender differences in labour force participation, employment, layoff, and earnings. Indeed, strong and positive relationships between years of education and labour force attachment; employment; and earnings are identified based on several reasons. First, higher education is often associated with larger direct costs and opportunity cost, with the anticipation that these costs will be recouped in the form of higher earnings and occupational attainment after graduation. However, to reap this return on education requires the person to participate in the labour force for a sustained period. Second, higher education enhances both market and household productivity, but market productivity is expected to be improved more (Kaufman & Hotchkiss, 2003). Additional education, in other words, increases the cost of non-market activities such as household work, childrearing, and leisure, encouraging those people to spend more time on market work and less on non-market activities. Third, education changes individual tastes and attitudes towards non-market and market work, and higher education probably raises the labour participation rate. Fourth, in addition to the duration of education attainment, a shift in fields of study also affects the probability of women's participation in the labour market. Since additional education increases women's productivity and their reliability in the labour market, it enables them to specialise in better paying fields, moving out from lower paid female occupations to better paid male occupations (Blau, et al., 2006; Kaufman & Hotchkiss, 2003; Pollak, 2005).

The human capital model explains why women were less likely than men to pursue college and graduate study viewing the length of their working lives and the discontinuity of expected labour force participation. Under the traditional male breadwinner bias: "men dominate the outside while women dominate the inside". For biological, cultural, and social reasons, females take the major responsibility for household work, childrearing, and elder caring, which substantially diminish the

energy and time that they could spend on paid work, and increase the probability of job interruptions, especially for mothers with the youngest child aged under five; thereby, women cannot benefit as much as men from additional investment in education (England, 1993; Kaufman & Hotchkiss, 2003; Schilt & Wiswall, 2008). Figure 2.2.1 shows the impact of expected work life on the education investment decision. EF is the earnings-experiences line of high school graduates; CH is the income curve of college graduates. Although college graduates bear direct cost (showing as AB0a: pecuniary cost for study in college, such as tuition fees) and opportunity cost (money the person may earn if they go to work instead of college, showing as E0aO) for additional education, their earnings curve is much steeper than that of high school graduates. This may be because college graduates are more efficient in human capital accumulation; or employers are more likely to invest and promote college graduates since they are supposed to be more reliable and have greater potential to improve production than high school graduates (Kaufman & Hotchkiss, 2003); or simply, college graduates are more able and likely to work in occupations and fields that provide higher pecuniary returns on additional education and experience. It is worth emphasising that the earnings curve slopes upwards, either continually increasing at a decreased rate or declining in later life[3]. According to human capital theory, since individuals have a whole work-life ahead in their early life, returns to experience and training are reaped for a long time. By contrast, the "present value" of training is smaller in one's later life, because there are fewer work years during which to accumulate the returns. Therefore, older individuals typically purchase/receive less training[4] (G. S. Becker, 1993). Moreover, the marginal return to experience tends to decline after a certain accumulation of experience. Since older employees have gathered much experience already, the marginal return to one additional year of experience for older workers is expected to be smaller than that of young and middle-age employees[5]. To conclude the diminishing effects of training

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[3] This discussion also applies to figure 2.2.2 and 2.2.3.

[4] Employers have less incentives to promote training for older workers, and older employees have fewer incentives to receive additional training.

[5] Theoretically, there is an inverse U-shape relationship between earnings return and years of experience, economic returns to experience initially increase at the beginning of work, but start to decline while the experiences accumulated at a certain level. A recent empirical study has indentified the highest return point for years of experience in the Chinese labour market, which increased from 24 (in 1993) to 29 years (in 1997). Similarly, the negative economic returns to experience also are delayed from 47 years (in 1993) to 57 years (in 1997) (Qiu & Hudson, 2010). However, it is hard to image that

and experience on older individuals' productivity, earnings rise less quickly or even decline in later life (Polachek, 2004).

Figure 2.2.1: The Impact of Expected Work Life on Education Investment Decision
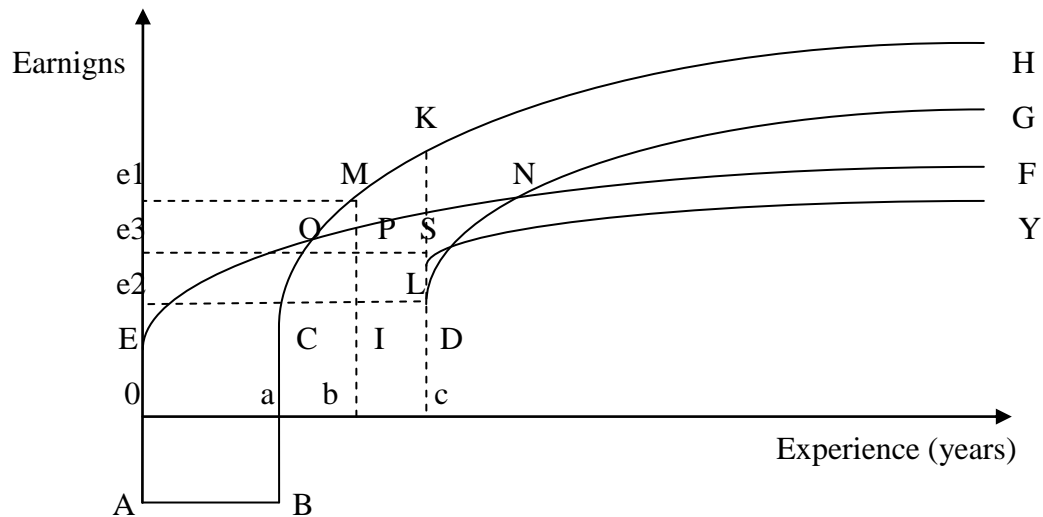
Why are persons with additional education motivated to participate in the labour force for a sustained period? First, additional education is costly, and people need to work overtime to cover the expense. Second, job interruption would seriously erode a person's life-time income, especially for those with a steep earnings curve. For example, say Laura plans to be in the labour force for a few (b-a) years after college, drop out for couple of (c-b) years for childbearing and childrearing, and retire at the same age as most of the others. Her shorter work life reduces the rewards of her human capital investment because it is generally believed that working skills depreciate during job interruption (Blau, et al., 2006; England, 2005; Kaufman & Hotchkiss, 2003). Laura's earnings after an interruption of (c-b) years are at e2, which is less in real terms than she was making when she left (e1). And Laura's earnings profile will switch from CH (without interruption) to DG, indicating that she not only loses earnings while away from work (area MbcK), but job interruption also costs her

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additional experience has direct negative effects on productivity. The negative impact of aging on productivity overcoming the diminishing effects of experience may be the major cause of such a phenomenon. This issue will be examined in this thesis.

a reduction in earnings over the remainder of her working life. For Laura, the total rewards of the investment in additional education (area NFG) are less than its total costs (area EABO), making it not worth for her investing in additional education. According to human capital theory, a rational person will only take additional education while its total returns (area OFH, or NFG area in case of job interruption) are larger than its total costs (area EABO) (G. S. Becker, 1993).

With respect to women in general, since they are often associated with frequent and longer job interruptions because of their biology and social norms, they face strong barriers to additional education. In addition, some traditional gender roles and social pressures also limit many women's investment in specific types of education as it will not pay them to make the types of investment where profitability depreciates rapidly during periods of work interruptions. Hence, fields where the rate of technological change is rapid and work that requires sustained and high-level commitment to the labour force are often discriminated against women. Women, therefore, concentrate in fields where the cost of workforce interruptions is lower, fields often associated with lower income and referred to as the 'secondary sector' in the dual labour market theory (Doeringer & Piore, 1985). In Laura's case, the life-time total pecuniary reductions caused by job interruption are areas MbcK and KDGH. By contrast, this reduction is much smaller for women working in 'low interruption penalty' jobs. For instance, for a person originally with EF earnings profile (high school graduates), (c-b) years job interruption would switch their earnings profile to LY, and bring her PbcS plus SLYF amount of life time pecuniary reduction. Not surprisingly, people with more educational attainment and working in jobs that emphasise work continuity suffer more pecuniary loss from job interruptions. This explains why educational level and work continuity positively enhance each other. To be precise, since females are more likely to have job interruptions, they have less motivation to pursue additional education than males. However, once a female has invested in additional education, she is encouraged to work continuously and has fewer job interruptions.

In accordance with dual labour market theory, the secondary sector is characterised by lower wages, little or no prospect of internal promotion, relatively unstable employment relationships, and primarily low or unskilled jobs (may occur within the same firm). Theoretically, pecuniary returns to education attainment and experience are significantly different between the primary and the secondary sector, not only in

terms of the level of earnings, but also the rate of increase for income with additional years of experience. The primary worker is expected to gain additional benefits from internal labour market promotions; on the opposite side, the secondary worker's earnings stagnate in a dead-end job (Doeringer & Piore, 1985) (this issue will be discussed in greater detail in 'Industry and Occupation' section). An empirical study has indentified a six percent financial return on additional education (and one percent for experience) for primary sector workers and no return for secondary sector workers based on a dataset in 1980 in the US (Dickens & Lang, 1985). One needs to emphasise that since the study limited the sample to men who were heads of households, the reliability of this result is very doubtful. Moreover, it is important to bear in mind that social pressure is a another major factor contributing to gender differences in labour force participation patterns, indentified as the primary cause of gender differences in educational investment decisions in the human capital model (Blau, et al., 2006). To conclude, women, who have shorter working lives, more interruptions of workforce participation, and more non-market activities are likely to make lower educational investments because it less profitable for them.

In addition to those barriers to women's access to education, there are another two issues that have substantially adverse influences on women's educational attainment. The Cultural Revolution in China from May, 1966, to 1977, was one of the largest interruptions to an educational process in world history. It seriously affected the formal education of an entire generation – also known as the 'Unlucky Generation' who were born between 1948 and 1957 (Deng, 1997; J. Liu, 2007; Xin Meng & Gregory, 2002). Although most primary schools continued to operate as usual, most secondary schools and tertiary institutions were shut down in the first two years of the Cultural Revolution and most tertiary level institutions were not reopened until 1970 (Xin Meng & Gregory, 2002) (or some studies claim the year as 1972, see review on Deng, 1997, p. 400). Even worse, tertiary education faced two problems after the reopening. First, since many of the former lecturers and professors had been purged or sent to the countryside for political re-education, a lack of qualified lecturers and professors became a major problem of university education during the period (Xin Meng & Gregory, 2002). Lower average preparation and quality of university students was the second core difficulty of tertiary education. Since the recruitment examinations of tertiary education were abolished in the Cultural Revolution period

and had not been re-established until 1977, the core criteria for college admission became political attitudes and family background rather than academic merit. Political loyalty and performance became the first and the most important criterion for admission. New university students, thus, were drawn only from those who were workers, peasants, or soldiers with two or more years of working experience and knowledge equivalent to secondary school graduates or more, rather than senior high school graduates (Deng, 1997; Xin Meng & Gregory, 2002). Therefore, the Cultural Revolution placed that unlucky generation at a huge disadvantage for gaining tertiary education and, hence, this generation became more vulnerable to layoff and unemployment in the labour market. As I discussed earlier, this phenomenon was especially significant during the radical reform phase, because most people from the unlucky generation worked in the SOE sector, with a low educational level, and were middle-aged by this time. They almost match all the typical factors that could increase the chance of losing one's job during the radical reform phase (see "economic transformation" section). As Mother Li (an interviewee in the study of Liu (2007, p. 144)) commented: "The life of our generation was really tough. When we were schoolchildren, everything was messed up by the Cultural Revolution. We learned nothing at all. Then when we were allocated a job at the work unit, how were we to know that the factory would run down in twenty years time? Our generation is full of misfortunes!"

In addition to the Cultural Revolution, China's gender-differentiated retirement policy released in 1994 is another major barrier to women's education attainment. According to this policy, white-collar employees of government institutions and companies are required to retire at the age of 60 for men and 55 for women, and the retirement age for blue-collar employees is 55 for men and 50 for women (Ding, et al., 2009). The lower retirement age for women means they have a shorter working life compared to men; in other words, it reduced returns on education for women, and lowered their incentives to obtain higher level education.

Although the past inequalities in access to higher education are diminishing over time, the educational attainment of adult women nationwide still remains lower than that of men in today's China (J. Zhang, et al., 2005; Y. Zhang, et al., 2008). Statistics show that the average years of education for women's growth was 1.5 years, from 5.5 years in 1990 to 7 years in 2000, and the difference in years of education that favours men

continued decreasing from 1.9 years in 1990 to 1.3 years in 2000 (Table 2.2.1 and Chart 2.2.1). Whatever the past or remaining barriers to women's access to higher education, the growth in women's representation in college and postgraduate study is truly remarkable. Official statistics show that the proportion of women in institutions of higher education has increased from 35.4 percent in 1995 to 44 percent in 2002 (Chart 2.2.2). The gender distribution of female graduates rose continuously from 20 percent in 1991 to 38.7 percent in 2002 for master degrees, and from 9 percent to 26 percent for doctoral degrees (Table 2.2.3 and Chart 2.2.3).

Table 2.2.1: Mean Years of Education, 1990-2000

Year	Male	Female
1990	7.4	5.5
1995	7.8	6.1
2000	8.3	7

Source of Data: (China's National Bureau of Statistics, 2005b)

Chart 2.2.1: Mean Years of Education
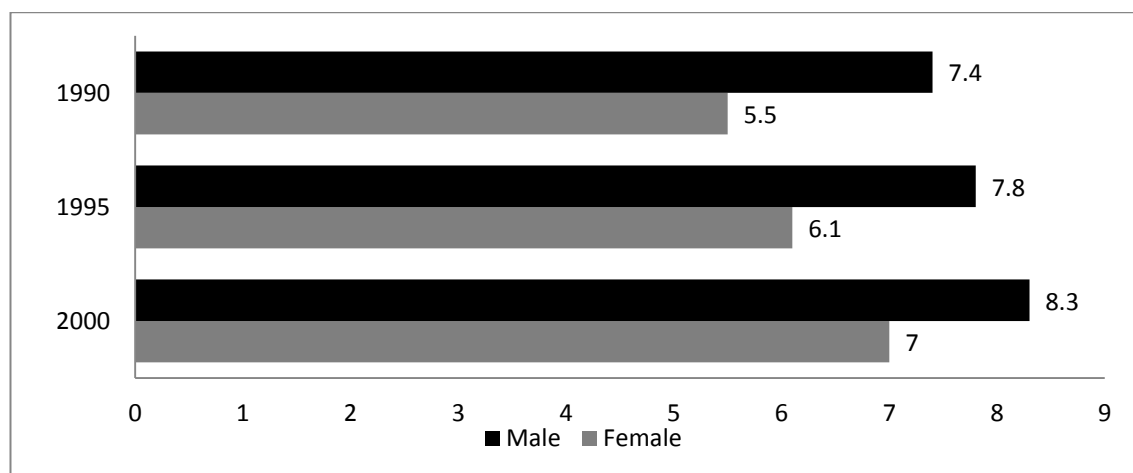
Source of Data: (China's National Bureau of Statistics, 2005b)

Chart 2.2.2: Gender Composition of Regular Institutions of Higher Education
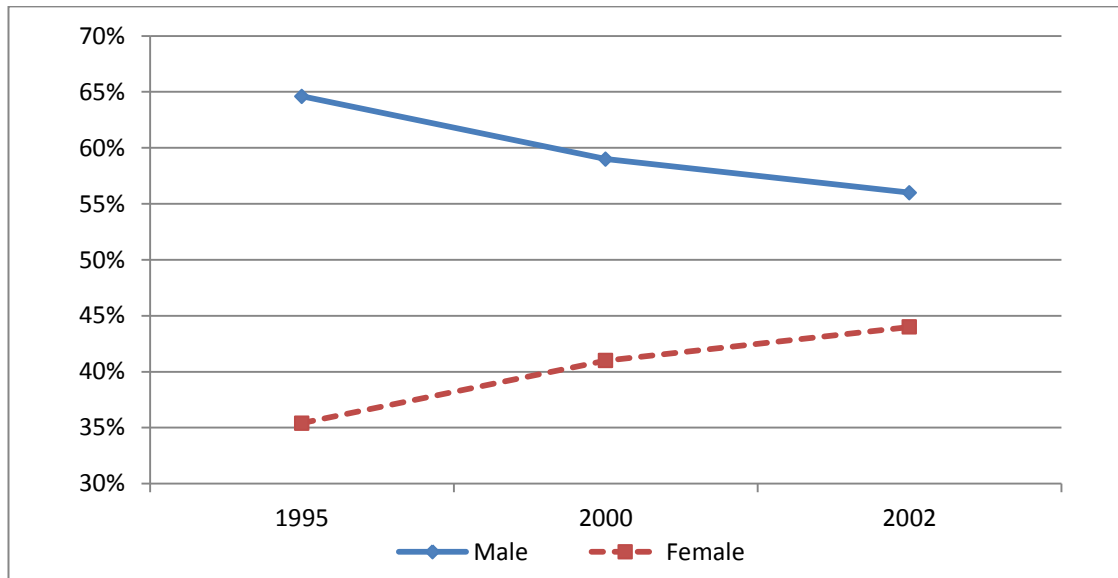
Source of Data: (China's National Bureau of Statistics, 2005b)

Table 2.2.2: Graduated with Master and Doctor Degrees in 1991 – 2002

Year	Master			Doctor		
	Number	Sex Distribution		Number	Sex Distribution	
		Female	Male		Female	Male
1991	30392	20	80	2532	9	91
1995	27123	28	72	4641	12	88
2000	47565	34.1	65.9	11004	21.5	78.5
2002	66203	38.7	61.3	14638	26	74

Source of Data: (China's National Bureau of Statistics, 2005b)

Chart 2.2.3: Gender Composition of Graduates with Master and Doctor Degrees
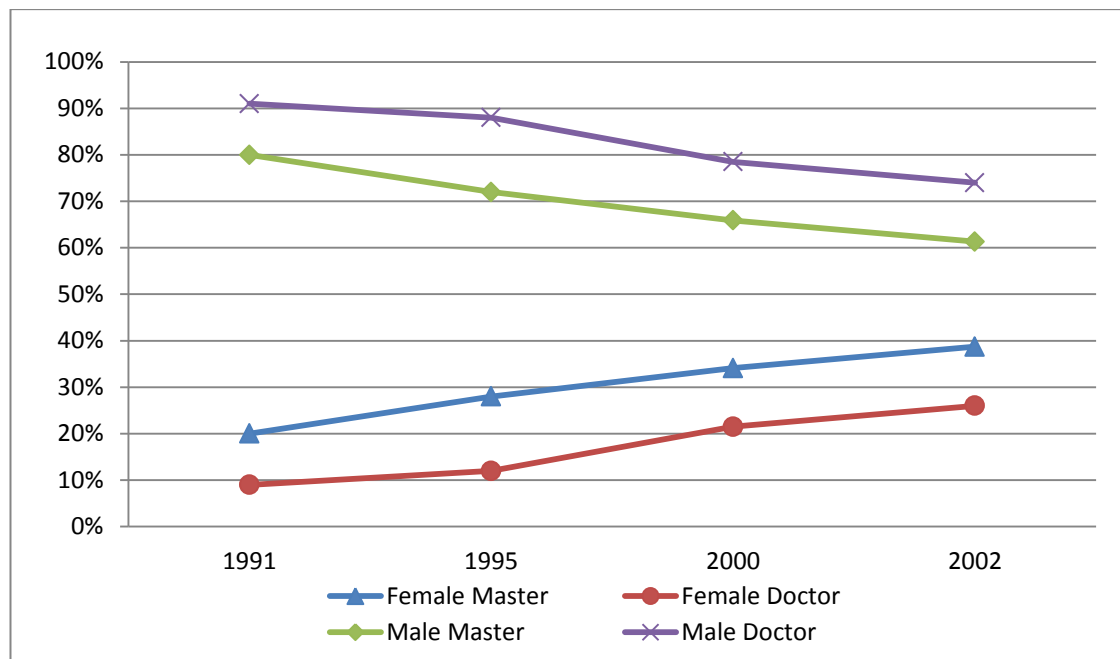
Source of Data: (China's National Bureau of Statistics, 2005b)

According to empirical studies, there are at least three explanations for the decline in gender differences in educational attainment. First, the human capital model suggests one reason. Since women, especially young women, anticipate spending longer periods in the labour market and becoming more focused on their working lives, both pecuniary and non-pecuniary return on their investment in higher education increased and, hence, reinforced their incentives to securing higher levels or more market-oriented education. Similarly, once women decide to acquire higher education, their attachment to the labour force is enhanced as the opportunity cost of non-market activities is increased (G. S. Becker, 1993). In other words, the relationship between educational attainment and labour force attachment becomes a self-reinforcing positive feedback loop. Second, as discussed in many studies, marriage encourages a division of labour – a specialised 'his or her' family role, a specialisation improving the efficiency of the family more than if both persons shared market and non-market activities equally (G. S. Becker, 1973). However, the divorce rate rose from 0.3 percent in 1978 to 1.5 percent in 2006 in China (Table 2.2.4 and Chart 2.2.4), establishing an independent source of earnings is now increasingly important for the female. Compared to men, women are more likely to lose the source of earnings from

marital dissolution because they are often specialised in non-market activities in the family (Kaufman & Hotchkiss, 2003). Women, therefore, face stronger motivation to invest in additional education and marketable fields since the divorce rate increases over time (this issue will be considered in greater detail in the 'Family Circumstance' section). The development of contraception is another major factor with important effects, directly and indirectly, on women's educational and training decisions (Goldin & Katz, 2000). For the direct effect, improved reliability of contraception enables women to delay marriage and concentrate on professional education or training. The indirect effect of the improved contraception is that, once encouraged to pursue this higher education and more professional training, they often delay marriage until completing it. If in the interim others marry, career women will face a reduced pool of eligible bachelors at the end of the additional education and training. However, since improved contraception enables every woman to delay marriage, it may lower the cost of a lengthy career investment period if non-career women delay their marriage long enough. Thus, better contraception, by enabling the delay of marriage for youth, may encourage more women to invest in careers. Overall, increased reliability of contraception tends to positively contribute to women's educational attainment[6].

Table 2.2.3: Marriage Rate and Divorce Rate

Reference year	Number of marriages	Crude marriage rate (‰)	Number of divorces	Crude divorce rate (‰)
1978	5978000	6.1	285000	0.3
1985	8313000	7.8	457938	0.4
1995	9341000	7.7	1056000	0.9
2005	8231000	6.3	1785000	1.4
2006	9450000	7.2	1893000	1.5

Source of Data: (United Nations Population Division, 2009)

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[6] In recent decades, an increasing proportion of women have gone to and graduated from college in China (Chart 2.1.2), in the U.S.A. and most of Europe. However, men and women with a similar amount of education still tend to choose different fields of work. Why is this happening? What causes this 'abnormal' phenomenon? This topic will be taken up in the "Industry and Occupation" section.

Chart 2.2.4: Crude Divorce Rate (Number of Divorces per 1000 People)
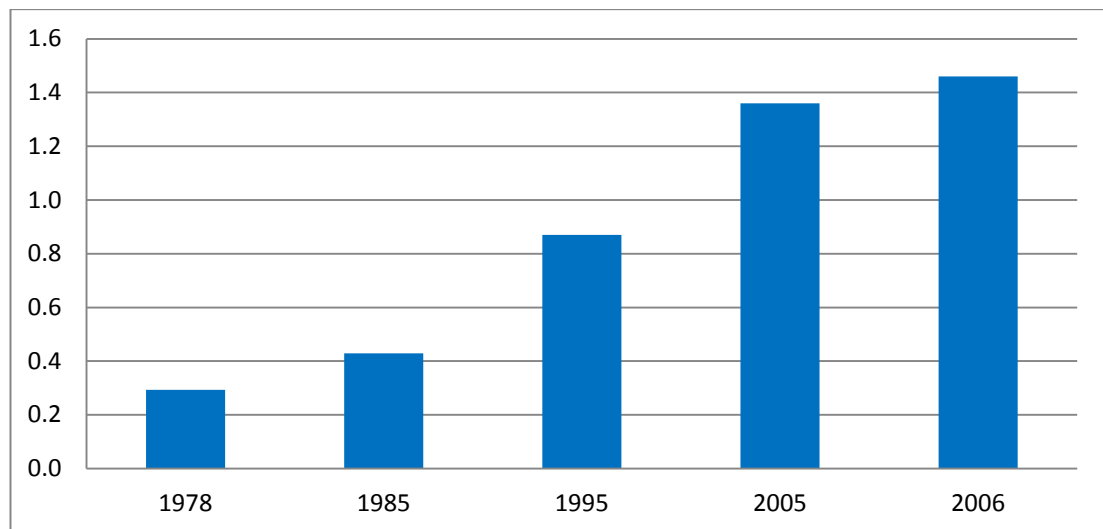
Source of Data: (United Nations Population Division, 2009)

It is important to bear in mind that education is only one of many factors contributing to income levels, though it is a major one. Therefore, it is not a surprise that women and men with equal educational attainment still have disproportionate earnings, favouring men. What can account for this disparity? Economists have found at least three explanations. First, the discontinuous pattern of women's working life and its adverse influences on the accumulation of on the job training contribute negatively to women's earnings. The different types of industries and occupations that men and women choose are the second explanation. Finally, discrimination is an undisputed source of disparate earnings (Kaufman & Hotchkiss, 2003). I thus hypothesise that the absolutely and relatively (to men) increased education attainment for women increased the time spent on market activities, declined their discontinuous nature of working life and relevant adverse influences, and enlarged their industrial and occupational choices. Therefore, it theoretically increased educational return to women and diminished gender differences on returns to education.

This conclusion tallies with findings from several empirical studies in the Chinese labour market, which demonstrate that, women gain more pecuniary returns than men from education. In an early study, Shu and Bian (2003) argue that in 1988 men's annual wages increased by approximately 0.5% for each additional year of education, while women's increased by approximately 1.7%. By 1995, these numbers rose to

2.4% and 2.9%, respectively. A more recent study, in 2000, concludes that those numbers increased another time from 2.7% to 5.1% for male and 5.6% for female workers (Shu, et al., 2007). These findings are consistent with analyses of other datasets from CULS 2001 and CHIP 1988-1995 (Gustafsson & Li, 2000; Y. Zhang, et al., 2008). A significant gender wage gap in education was only found in 1988 in studies of Shu and Bian (2003), and Gustafsson and Li (2000). The gap was not detected in the later observed years, in 1995 and 2000. These findings are in agreement with the findings of Zhang et al. (2005) and Johnson and Chow (1997): income return to education increased rapidly from 1988 to 2001, the return higher for women than for men in the early stage of economic reform; nevertheless, the gap displays a declining trend during the period. Identifying trends of earnings return and a gender wage gap in education over time are not in the analytic interest of this paper, but I can thus hypothesise an intrinsic positive effect of the educational attainment on gender earnings in urban China and an increased income return to a higher educational attainment.

It is worth emphasising that because of data limitations, those previous studies rely on monthly or annual earnings rather than hourly wages. Estimating returns to education on monthly or annual earnings may result in the omission of a variable bias. For instance, Li and Zax (2000) found that educational attainment tends to negatively associate with working hours; in other words, the omitted working hour variable has a negative relationship with returns to education. Similar problems may also occur across different sectors, firm ownerships, and cities. For example, workers in the private firms generally earn more than those in state owned firms, but they also work more hours. Furthermore, although the returns of earnings to education in China experienced a destructive decline during the Cultural Revolution, they increased stably during economic transition and recovered in the 1990s (B. M. Fleisher & Wang, 2005). In particular, the returns to education in the early post-Mao phase[7] are either statistically insignificant (Gelb, 1990) or significant at the value close to zero (Gregory & Meng, 1995) . Although the rate continued to increase during the economic transaction period to around 5.4% by 2000[8], the returns of earnings to

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[7] Late 1970s is also the post-Culture Revolution and prior-economic transition period.

[8] Most other transitional economies also experienced the rise of returns to education within the economic transition phase, see review in (H. Li, 2002, p. 318).

education is still apparently lower than that of the world average (10.1%), the Asian average (9.6%), and range for low and middle income countries (11.2-11.7%) (Psacharopoulos, 1994). Haizheng Li (2002) argues that the overall lower rate of return to education in China is caused mainly by the extremely low return to elementary (primary) school. The returns are considerably higher by calculating educational attainment above elementary school only. In order to avoid those two problems and indentify more accurate results, this thesis, estimates hourly wages return to education rather than monthly or annual earnings, and educational attainment by several dummy variables[9] instead of the number of years spent in education.

Educational attainment is not the only factor that experienced changes in the economic transition phase; the labour force participation rate of males and females also had notable changes in the recent three decades (Chart 2.2.5 and 2.2.6). In 1980, China's labour force participation rate was 79.5% (population aged 15 and over), for men it was 87.5% and 71% for women. By 2009, this rate decreased to 73.7% for the total population, 79.7% for men and 67.4% for women. Although the total labour force participation rate declined slightly in the last three decades, males and females experienced different changes. On the one hand, the male labour force participation rate has experienced continued dropping since 1980. By contrast, the female rate has experienced a continued raise since 1982, resting by 1991, and then decreasing. The gender gap had a sharp decrease from 16.4% in 1980 to 11.9 % in 1991, and then fluctuated between 12% and 13%.

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[9] Which indicate middle school and lower education level, high school level, diploma level, undergraduate and higher education level.

Chart 2.2.5: Labour Force Participation Rate (15+)
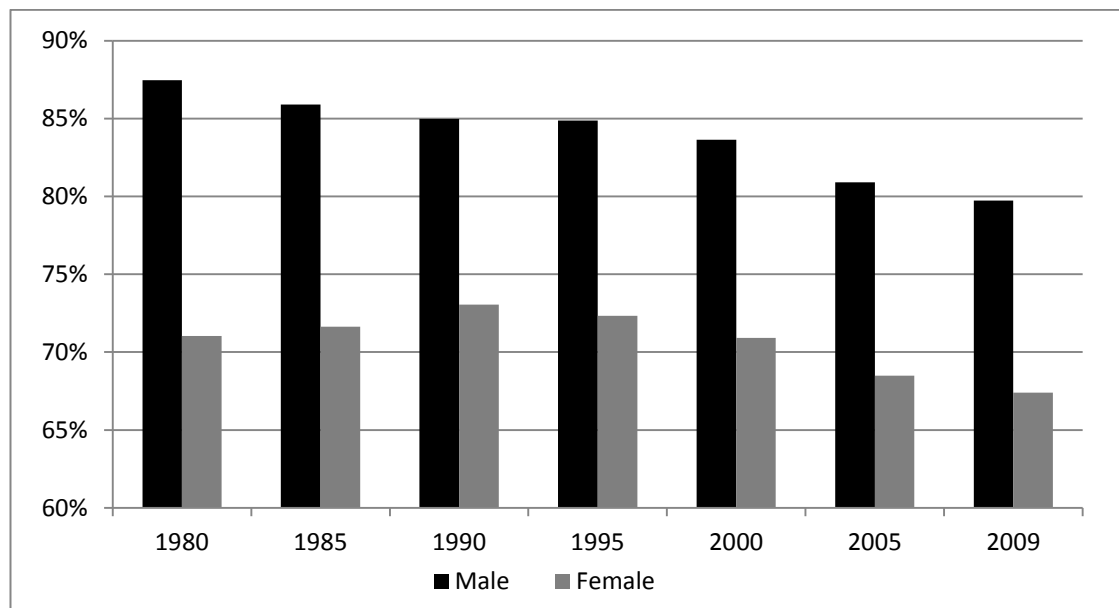
Source of Data: (UNdata, n.d.)

Chart 2.2.6: Labour Force Participation Gap
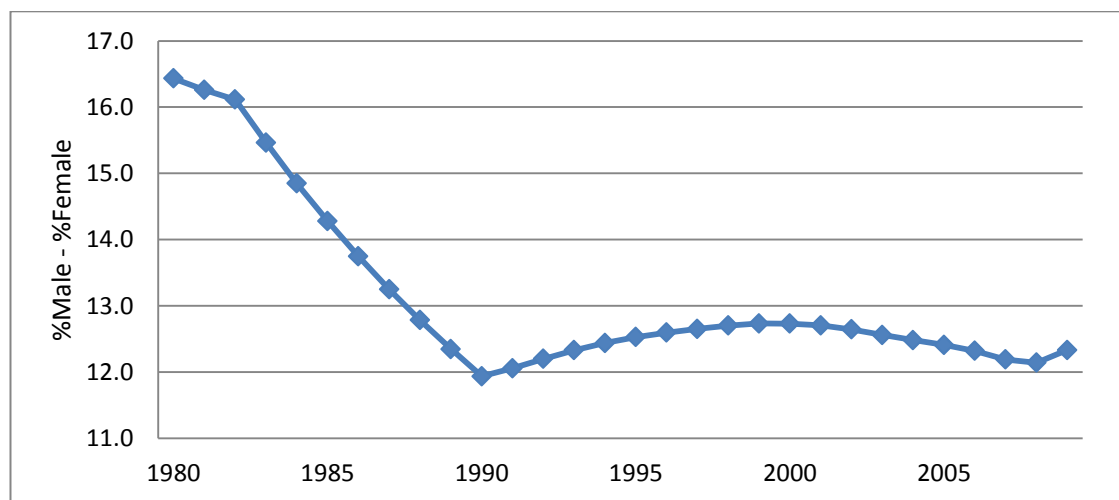
Source of Data: (UNdata, n.d.)

One may still wonder why education is often cited as a major determinant of labour force attachment and earnings and why it has significant influences on one's employment and layoff. The answer is simple. As I discussed earlier, according to the advocates of human capital theory, the link between education and earnings is productivity, and there is no doubt that productivity is the key determinant of employment, earnings, etc. (Kaufman & Hotchkiss, 2003). However, not all economists agree with this point of view. While, they are not denying the positive link

between education and productivity, they believe that employers apply education as a 'screening device' this being the primary reason for the intimate relationship between education and labour market outcomes, because it is useful and inexpensive instrument to measure the productivity of employees (Blaug, 1976). In the next paragraph, I discuss the screening device function of education through its application in the employee selection process.

A typical employee selection process includes five steps: job analysis, criteria determination, choosing predictors, analysing predicator-criterion relationships, and profitability and usefulness (Kaufman & Hotchkiss, 2003). Steps 2 to 4 are the heart of the employee selection programme; however, imperfect and asymmetric information often confuse the application of these steps. Hence, making optimal choices based on educational attainment in situations of imperfect and asymmetric information became a topic of interest to economists. Spence, Stiglitz and Akerlof, who received Nobel Prizes in 2001 for their contributions in asymmetric information, have provided many in-depth discussions on this topic (Barkley & Rosser, 2003). What is the function of educational attainment in the process of employee selection? Simply, because the employer is uncertain about each applicant's actual level of productivity at the time of hiring, they divide applicants into two groups: a high-ability and a low-ability group, and use years of education as a screening device to separate workers. For example, firms set specific years of education as the "equilibrium education" (Spence called it 'Signalling Equilibrium'), and believe that workers with less than equilibrium education are less productive, belong to the low-ability group, and should be paid less, and vice versa. Nevertheless, setting a 'correct' signalling equilibrium (SE) is a difficult assignment as each firm has a unique SE. Even worse, an incorrect SE invalidates the whole system [10] (Spence, 1973). Personally, I suggest combining these two points of view, and conclude that education is indeed a core screening device of personal productivity.

Does social and political capital become another kind of screening device, and what are the differences between it and education in terms of screening, might be two interesting issues to discuss, because social and political capital in China is special and

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[10] Identifying a signalling equilibrium is not in the analytic interest of this thesis, more discussion of the screening view of education can be found in Spence's (1973) study as well as Thurow's (1975) and Kaufman and Hotchekiss's (2003) books.

different from that in developed western countries. In China, social and political capital often refers to access to an industry and occupation through unusual ways (back door), rather than personal capital in western countries.

On-the-job Training

Access to human capital after entering the labour market is also important in understanding the current work status and income of the urban work force. It is advisable to study on-the-job training (OJT) because access to it once in the labour market is an important dimension of access to human capital, and the gender difference in human capital can translate to disparities in skills and experiences that may increase employment and earning power (Morrison, et al., 2007; Y. Zhang, et al., 2008). OJT is as much a form of human capital investment as formal education, consisting of both current costs and future benefits. Employers bear the direct pecuniary cost of training and the indirect costs of lower productivity during the training period, but as a reward, their workforce will be more productive. Employees may also share some of the training costs by working at reduced wages during the training phase. As their reward, they obtain additional skills and experiences that enhance their employment power, earning power, and bargaining strength in the labour market (Kaufman & Hotchkiss, 2003).

According to Becker (1993), on-the-job training can be divided into two conceptual types: general training and firm-specific training. General on-the-job training increases a worker's productivity in the firm, and it is entirely transferable to other firms in the labour market. Firm-specific on-the-job training, however, is not transferable, increasing the worker's productivity only at the firm providing it. Compared to general training, specific training is more likely to provide a permanent attachment between the firm and the trained worker. Turnover is very costly to both, the firm losing all of its investment in specific training and the worker losing all the benefits of specific but non-transferable training (Blau, et al., 2006; Kaufman & Hotchkiss, 2003). Both firm and worker are likely to have shared the costs of, and return to, specific training. As shown in figure 2.2.2: area WFM is the employer's share of training costs; EWM is the worker's share of training cost; MF`W` is the employer's share of gross benefits; MW`E` is the worker's share of gross benefits. By

contrast, workers are more likely to bear the cost of general training, because it is transferable (G. S. Becker, 1993). It reinforces worker expectation of stable work since they pay part of the cost. In addition to the more stable attachment between the firm and the worker, specific training also play a core role in the development of job ladders and the internal labour market within the firm. The reason is simple; no internal labour market is needed if all required job skills can be obtained though general training, and the firm can easily hire workers in the external market (Kaufman & Hotchkiss, 2003).

Figure 2.2.2: The One-The-Job Training Investment Decision: Firm-Specific Training
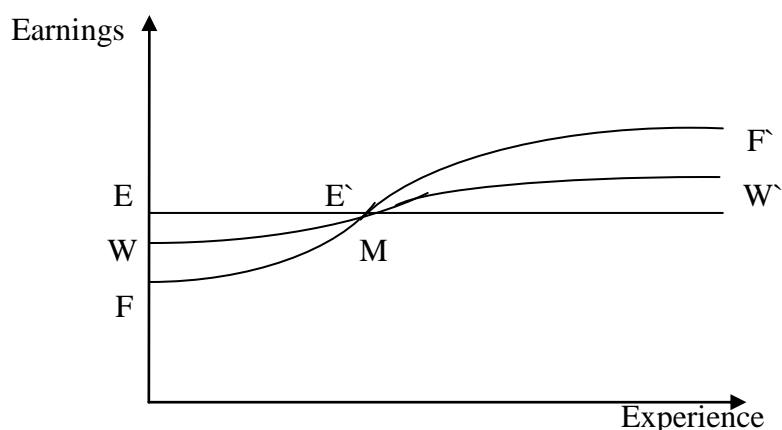
Recalling the suggestion from human capital theory, women anticipate shorter working lives and more interruptions in workforce participation, characteristics contributing to their lower average educational attainment. Similarly, the lower expected probability of women's remaining in the workforce reduced the motivation on (women's) training investment for both the employer and the female worker. These effects are especially significant for specific training decisions, because the returns to both employer and worker's investment in specific training were completely obliterated by a worker's 'quit' from the firm. Thus, women will carefully avoid jobs that emphasise specific training, and employers will avoid investing specific training in them (Blau, et al., 2006). This phenomenon is consistent with women's decisions on education investment. In the case of women's labour force attachment and career orientation increase, opportunities for receiving job training and the returns to the job

training investment for them will grow. As women receive more training and obtain more returns from it, the cost of withdrawing from the labour force and workforce interruptions is increased further reinforcing their labour force attachment (Kaufman & Hotchkiss, 2003). Identical to the relationship between education attainments and labour force participation, on-the-job training investment and labour force attachment enhance each other. Discrimination, however, is another considerable factor that influences both employer and worker's training decisions. Given that women are less attached to the labour market than men on average[11], employers may prefer men for jobs that emphasise specific training because they believe that women are less likely to stay[12]. For female workers, gender disparity in training opportunities caused by employers discrimination may indirectly lower their incentives to invest in themselves by decreasing the rewards for doing so (Blau, et al., 2006).

In accordance with human capital theory, investment in on-the-job training also helps explain the age-earnings profile. As Becker (1993) stated that formal education can be considered as a type of job training, and the reason why earnings tend to increase with experience in the labour market is because job training could enhance the worker's productivity. As shown in figure 2.2.3, the earning level for school graduates given no training and experience would be at 'ab' or 'cd' depending on their educational level. Initially, wage level is reduced from w3 to w2 for 'cd' employees with general training as the training lowered the time spent on production. Their earnings then rise with increased productivity as a result of more training and accumulation of experience. As a person becomes older, their existing human capital depreciates at an increasing rate. As a consequence, the increase of the earning level declines after midlife as shown in line 'eg' (Kaufman & Hotchkiss, 2003). However, there is noticeable controversy on the direction of causation between earnings and productivity. Medoff and Abraham (1981) believe that workers reward experienced employers with their higher productivity, because workers are given the incentive to work hard and remain with the firm until retirement, reaping the higher earnings that come with longer tenure. On the opposite side, as efficiency wage theory demonstrates, employers pay their employees more than labour market equilibrium

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[11] It is important to bear in mind that 'on average' means not every woman is less attached to labour market than men.

[12] Which is be called "statistical discrimination", see "Discrimination" section for more details.

wage to increase their productivity and efficiency[13]. Critics of the human capital explanation argue that the productivity-enhancing effects of on-the-job training are not clear. One explanation is that the rise in earnings with experience simply reflects the wide spread use of seniority arrangements (Blau, et al., 2006). Discussions on the causality of experience and earnings, however, are not in the analytic interest of this paper, and thus given no further attention. Due to the limitation of the data source, it is impossible to distinguish specific from general training in this thesis; I thus apply 'on-the-job training' as the only indicator of the training category. As one of the limitations of this thesis, I am unable to investigate the different effects of specific and general training on gender earnings. Further studies on this particular issue, therefore, are recommended. According to the above discussions, whatever a person receives specific or general training, I hypothesise a positive effect of on-the-job training on worker's earnings.

Figure 2.2.3: The Age-Earnings Profiles
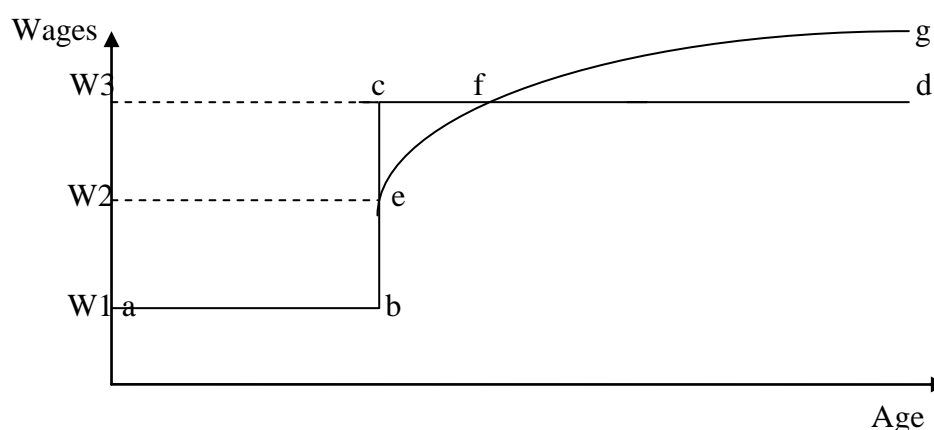
From the supply side, women's shorter working lives, more frequent job interruptions, and statistical discrimination[14] against women reduced employers' motivation to train them. As a consequence, women are less likely than men to obtain training, this substantially contributing to the growing earnings disparity over their life cycle (Olsen

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[13] There are more reasons for employers to pay an efficiency wage, see (Akerlof & Yellen, 1986) for more discussion.

[14] Detailed discussion on statistical discrimination is provided in 'discrimination' section.

& Sexton, 1996). However, recent studies demonstrate that the training gaps between genders diminish over time, the differences being much smaller today than they were in the past (Frazis, Gittleman, Horrigan, & Joyce, 1998; Veum, 1993). A more recent study even argues that women are more likely than men to participate in on-the-job training (Simpson & Stroh, 2002). These findings question the past argument that females have a lower probability than males to invest and to be invested in for future earning power. Even though women became much more likely to receive training than they were in the past, they are found to receive a different type of training than men. At this stage, women are found to be less likely to obtain firm-specific on-the-job training (Blau, et al., 2006; Kaufman & Hotchkiss, 2003). There is no doubt that the difference in type of training reflects voluntary choices by some workers themselves. For instance, a mother may refuse firm-specific training because she needs more flexible working hours to take care for her children. But this is only a part of the story, promotion decisions by employers driven by discrimination being another part of the story. Since highly accurate assessments to identify each individual's characteristic are expensive, employers may use group characteristics such as gender to make predictions, bringing the risk of discrimination. For example, employers may believe that female workers on average are less reliable than male ones and provide women with fewer training opportunities. This conclusion is consistent with findings from empirical analysis - the positive relationship between years of employment with the firm and the chances of receiving additional training is much stronger for a male than a female (White & Althauser, 1984).

Moreover, it is worth emphasising that male and female's age-earnings profiles are different from each other over the lifecycle. The male profile is generally higher and steeper than the female's, which indicates that men not only earn more than women but also experience a more rapid earnings growth. In particular, male earnings rise steeply in his early work career and then taper off; it tends to be a concave line. By contrast, the female age-earnings profile tends to be a more complex line, which rises slightly in her early work career, declines or flattens out during the childbearing and childrearing period, and then rises at a equal or greater speed than that of men (Mincer & Ofek, 1982; Polachek, 1975). Therefore, the gender earnings gap is a relatively small but growing trend in men's and women's early work career, the gap getting larger at a faster rate and reaching a peak during women's childbearing and

childrearing period, and finally keeping constant or decreasing when they return to the labour market. So why is the age-earnings profile of women flatter than that for men? As most research on this issue has concluded, women's more frequent career interruptions contribute at one-third to one-half of this difference, and occupational segregation and discrimination are another two factors that can largely explain the differences between men and women's age-earnings profile[15] (Kaufman & Hotchkiss, 2003, pp. 375-376).

Health Status

Relationship between personal health and earnings is another little studied but valuable topic to discuss. Health should be considered another element of human capital and was included in the Human Development Index and Gender-related Development Index (The World Bank, 2001). Based on the Physical Quality of Life Index (PQLI), the overall level of physical well-being of Chinese women has increased in recent decades, but a disparity in health between men and women still exists. The Gender-Related Development Index (GDI) further reveals that China has achieved significant progress in women's health during the past four decades, but far less has been achieved with respect to gender equality overall (Yu & Sarri, 1997). In accordance with the World Health Organisation (WHO) (2009), opportunities for paid employment is one of the identified determinants of health. Hence, it is worth debating the antithesis proposition of the WHO: does the outstanding gender inequality in health have intrinsic effects on gender earnings in urban China? Life expectancy, used as the key indicator of health in PQLI and GDI is unavailable in an individual-questionnaire based database. Therefore, instead of life expectancy, the paper applies "health status" to estimate the effects of health on earnings. Health status is measured in relation to people's age, and the survey asks how they would rate their health status (for example, people rate themselves 5 if they are very satisfied with their health at their age). This thesis expects to reveal a positive effect of health status on earnings.

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[15] Further discussions on job interruptions, occupational segregation and discrimination are provided in 'family circumstance', 'industry and occupation', and 'discrimination' sections, respectively.

2.3: Family Circumstances

Family and childrearing responsibilities can create an experience gap. For biological, cultural, and social reasons, childrearing has been the primary responsibility of the female parent, and as a consequence, women can have less experience and seniority than men. The experience gap is also created by marriage. Once a couple marries, they can become a gender specialised household with small initial differences motivating later differences based on incentives for family income or satisfaction maximisation (G. S. Becker, 1991). Women's household responsibilities, particularly after marriage or childbirth, are often greater than those of men. Drawing on the Australian National Social Science Survey in 1984, McAllister (1990) argued that unpaid housework had a strong negative relationship with women's earnings. Housework is comparable in importance to occupational characteristics in explaining income differences. Using the National Survey of Families and Households data from 1987 and 1992, Gupta (1999) finds that men decrease their hours on housework as they enter marriage or cohabitation, while for women, entering marriage or cohabitation means more housework hours. Thus, wives face barriers to earnings not experienced by single women and married men. Similarly, compared to single women without children and fathers, mothers face barriers to earnings as well. For America in 1979, Budig and England (2001) found a wage penalty of 7% for each child on the mother, the penalty not diminishing over time, even after controlling for human capital. Research has highlighted similar issues for wives and mothers in earnings in European countries (Davies, Elias, & Pierre, 2003).

In East Asian countries, the labour participation rate and income of women lags behind that of men. More importantly, women's increasing level of economic activity in East Asia does not appear to have been accompanied by an increase in men's domestic roles: housework and childrearing remain primarily women's work (Y. Zhang, et al., 2008). In other words, marriage and parenthood are two major causes of gender disparities in this labour market.

In the case of China, although Cao and Hu (2007) have found that married urban women and mothers are more likely to change jobs for family reasons and less likely to experience career-advancing job changes, findings on the effect of marriage on income are not consistent with all previous empirical studies. In accordance with Shu

and Bian (2003), earnings return to marriage experienced a substantial decline between 1988 and 1995, and the change was larger for women than for men. To be precise, married men no longer enjoy positive earning returns to marriage (decreased from 17% (significant) in 1988 to 5% (not significant) in 1995), and the returns for married women declined dramatically from positive to negative (from 21% in 1988 to -3% in 1995, both of these figures are statistically significant). Shu and Bian's findings from the 1995 dataset is consistent with the analyses of Zhang, Hannum and Wang (2008), though the negative effects of marriage on female's wage is much greater (-24%) in the later study. By contrast, a study on the 1992 dataset indentified a unique result, which married women earn 5 and 3 percent more than single women in the state and collective sector, respectively, but 12 percent less than in the joint venture sector. And both genders receive wage premium from marriage, but it favours men than women (Hughes & Maurer-Fazio, 2002). By the year 2000, what are the effects of marriage on men and women's wages? This thesis shall shed light on the question.

The literature review leads us to a number of questions: what are the effects of marriage and parenthood on men and women's time allocation and work earnings? What causes these effects? Are the effects related to each other? This section will discuss these issues[16].

Korenman and Neumark (1991) concentrated on two competing explanations of the positive association between marriage and income for males. Their first theory was 'marriage per se makes male workers more productive', and the second was 'males who marry are selected as having more innate ability to earn money than those who do not' which has become known as 'selection theory'.

There are at least two explanations for the first theory. One is Kenny's (1983) argument that married men accumulate human capital more rapidly than unmarried men, because married males are predicted to spend more hours in the paid market work than single males, and therefore have greater incentive to accumulate human capital. Becker (1991) has developed this theory in greater detail and incorporates it

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[16] Before moving to an in-depth discussion, it is important to bear in mind that the major disadvantage marriage and motherhood bring to women appear to be the disproportionate share of family responsibilities, which may interrupt women's careers, create an experience gap, motivate women crowding into female jobs, etc.

into the household specialisation pattern which indicate that marriage itself is "good for" a man in terms of labour market outcomes. The second, but not very convincing explanation, is that the earnings of a person are positively associated with their spouse's human capital (Benham, 1974). As Benham stated, a family should be viewed as a household firm composed of husband and wife rather than one individual. Thus, "the effective stock of human capital for each marriage partner is a positive function of the individual stock of human capital of each spouse within the household" (Benham, 1974, p. 58). Whatever the explanation, male earnings are supposed to benefit from marriage.

For females, however, Korenman and Neumark found that marriage tends to reduce their labour force participation rate, but it has no significant effect on the wage rates of those who do participate in the labour force (Bergstrom & Schoeni, 1996, pp. 125-126). However, according to statistics from the National Bureau of Statistics of China (1998, 2003), age has an inverse U-shape relationship with labour force participation (LFP) for both men and women, and not surprisingly, the inverse U-shape for men is much plainer (Chart 2.3.1). As argued by Meng (2000), those figures indicate that Chinese women rarely drop out of the labour force because of marriage or childbirth, exhibiting strong and continuous labour force attachment. It is important to point out that this relationship is different from western developed economies which have an M-shape relationship between age and LFP of women because of the effects of marriage and children (Blau, et al., 2006; Kaufman & Hotchkiss, 2003). In addition, the labour force participation of both men and women experienced a decline between 1997 and 2002, the change being greater for women. Nonetheless, analysing the change of labour force participation rate is not in the analytic interest of this thesis, and thus is given no further attention. It is important to emphasise that marriage does not influence a wife's or husband's wage rate directly, but through the effects of changes in household time allocation or support.

Chart 2.3.1: Urban Labour Force Participation Force, by Gender and Age
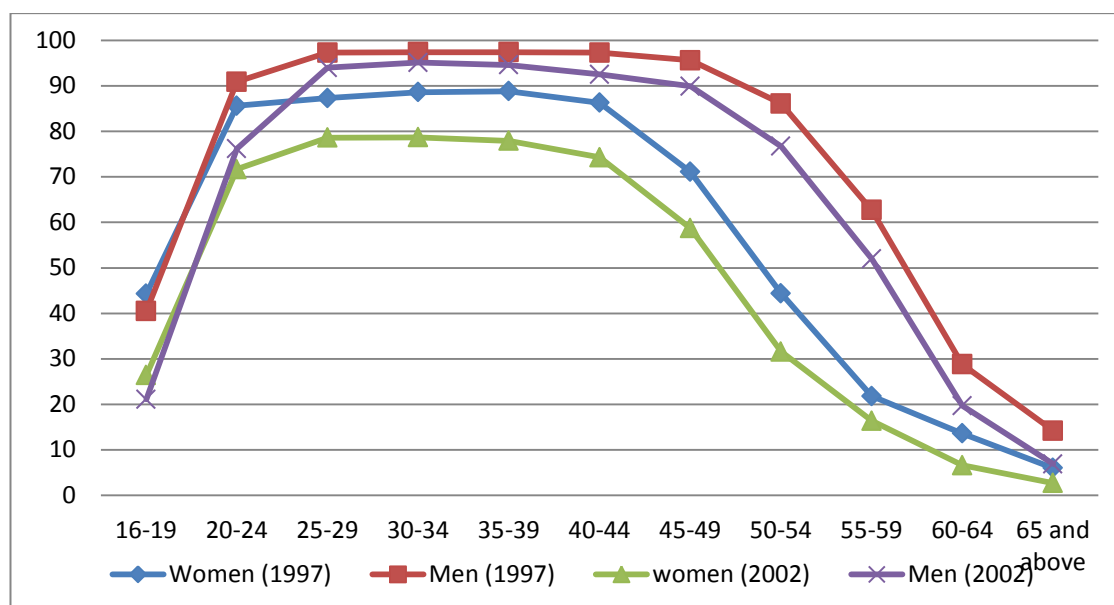
Sources of Data: (China's National Bureau of Statistics, 1998, 2003)

Household time allocations between married couples are one of the core sources of gender inequality in labour force participation and earnings. According to Becker's household model (1973), marriage encourages division of labour because specialisation within the family can improve and maximise the total amount of market and non-market goods of the family. The objective of the model is to maximise household utility by each spouse specialising in the field of comparative advantage, subject to the family's resource constraint: time to be allocated to market work and non-market work (household work and child care). The objective can lead to complete specialisation in the household, with the spouse in paid work (generally referring to the husband) specialising on market work, and the spouse in household work and child care (generally referring to wife) specialising in non-market work. As a consequence, males typically specialise in market work and the female in household work because the husband is expected to have comparative advantage over the wife in paid work and the characteristics of females made them more productive in non-market work, producing a more pronounced difference between males and females in paid employment and earnings. This phenomenon is particularly significant in families with young children under the age of five, because the presence of children substantially increases the importance of family and childrearing responsibilities, especially for mothers, enhancing men's and women's degree of specialisation in market and non-market work (Kaufman & Hotchkiss, 2003; Lippe, 1992). Although

recent empirical findings on the Chinese labour market do not support Becker's complete specialisation model, women are found to spend more time on household work than men, even among dual-earner households (Parish & Busse, 2000; Zuo, 2003). It is important to bear in mind that earnings are based on market work productivity and that income and housework are public goods shared between husband and wife. This assumption is behind the idea of the complete specialization pattern in the household.

Moreover, as Becker (1973, 1991) discussed, establishing equilibrium within the household, people tend to marry with those who have similar wealth, education, and other labour market characteristics. Two principles can explain why this happens. First, since marriage is nearly always voluntary, the theory of preferences can be applied; people are assumed to expect to raise their utility level through marriage, and after marriage this should be above what they were when they were single. Second, the marriage market is assumed to exist because many men and women compete while seeking mates, each person trying to find the best spouse subject to their characteristic constraints. Recalling the argument of Kenny (1983), both spouses could receive earning premiums from each other's human capital in both specialised and non-specialised households, thus, given the productivity of market or non-market work of one spouse, each person tries to find the mate with the best human capital and personal characteristics. Since everyone is searching such a mate in the marriage market, in accordance with the character of the market mechanism, marrying the person with complementary but similar human capital and personal characteristics brings the best result for most people (net of controls). For instance, in a specialised household, a low educated professional cleaning woman prefers to marry a professor. However, there may be better choices for the professor to take say, he meets a more qualified woman with the same household productivity but greater human capital than the cleaning woman. In such case, it is rational for the professor to choose the later woman to maximize household utilities.

In the post-reform era of China, "assortative mating" has been enhanced because personal connections have become more important for advancing individuals' positions in the labour market during the rapid reform phase, and marriage is one of the best channels for people to gain access to advancing social networks (Bian, 1994b; Walder, 1986) . Not surprisingly, several empirical studies have found that women

with powerful husbands (greater personal connections) can obtain various advantages, such as obtaining easier work or positions, gaining higher wages in the same position, lower risk of redundancy, easier to be re-employed, and have better prospects for career advancement (J. Liu, 2007; Rofel, 1999; Y. Song, 2007).

In a world without divorce, both spouses benefit from the specialisation pattern since it provides maximum household utilities. However, marriage failure does exist in the real world, both partners suffering a social capital loss. The possibility of divorce thus reduces the incentive of either partner to invest in each other (diminish motivation on specialisation). As I discussed earlier in human capital section, the crude divorce rate (number of divorces per 1000 people) in China has risen significantly from 0.3 in 1978 to 1.4 in 2006. Since 2003, China's divorce rate has risen at an average rate of 7.65 percent a year. In 2010, 196.1 million couples applied for divorce while 1,205 million couples married, and the divorce to marriage rate is as high as 16.27 percent, increased by 14.5 percent from 2009 (14.21 percent) (Ministry of Civil Affairs of the People's Republic of China, 2010, 2011). With respect to age more than half of all divorced couples are 35 and below. Within this group, the divorce rate is higher for people born after 1980, because blitz marriage (shanhun) and blitz divorce (shanli)[17] became common among the youth (X. Li, 2011). Most developed regions and cities have a higher divorce rate than the national average. Currently, Beijing and Shanghai have the highest rate, which is over on third (X. Li, 2011). Clearly, this increasing divorce rate becomes an important social and household issue in China.

From an economic point of view, the decision to divorce "entails a comparison of payoffs to the man and the woman from divorce to the payoffs of remaining married" (Iversen, Rosenbluth, & Soskice, 2005, p. 222). The payoffs of divorce are the utility a person can derive from the market and non-market activities they undertake on their own. In contrast, the values of remaining married include utilities a person could obtain from their own activities and the utilities from the spouse's activities (such as husband's wage or wife's unpaid work). Partners will remain married if the total utility of being married is greater than marital dissolution; if this is not the case, they will relinquish their marital relationship (G. S. Becker, Michael, & Landes, 1977).

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[17] Shanhun (and Shanli) are Chinese translations of English terms that originated in the early 21st century to describe a marriage (and divorce) between partners who wed (and break up) after knowing one another for less than 7 months.

Since marriage encourages a division of labour and women are often specialised into non-paid household work and child care, they suffer more serious loss from the marriage failure as they can lose the income previously provided by their husband (Hao, 2001). Establishing independent sources of earnings as an insurance against marital dissolution becomes the task of many women, especially when the probability of divorce is high (Blau, et al., 2006; Iversen, et al., 2005; Montalto, 1994).

The causality between female labour force participation and divorce moves in both directions: higher probabilities of marriage failure motivate women to invest more in market work, and on the other hand, greater opportunities and rewards for women in the labour market may release more women from unsatisfactory marriage once they become economically independent[18] (England, 1993; Iversen, et al., 2005).

In Becker's model, the prospective spouse can make binding and enforceable agreements concerning household time distribution within marriage without charge in the marriage market. Contingent agreements could be made in the marriage market, so that all bargaining would take place prior to marriage and leave no space for bargaining within marriage. Therefore, divorce is not an option in Becker's model; it is only a figure corresponding to the total utility of 0, which enables complete specialisation (Iversen, et al., 2005; Pollak, 1994). However, for the purpose of reducing the negative economic consequences of divorce, spouses often specialise incompletely within the household, even if complete specialisation is otherwise optimal. This is the major factor to understanding why many scholars take issue with Becker's complete specialisation model (Blau, et al., 2006; Iversen, et al., 2005; Montalto, 1994).

Within the last 15 years, Becker's model has been challenged by two other alternative models of distribution within marriage, which are the cooperative bargaining and non-cooperative bargaining models. These two models view distribution within marriage as the solution to a cooperative or a non-cooperative game. In the cooperative model, the "threat point" describes the payoffs of the players when they cannot reach an agreement through a Nash bargaining solution or similar axiomatic solutions. For

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[18] As we discussed in the "human capital" chapter, establishing an independent source of earnings is becoming increasingly important for Chinese women as the divorce rate in China has increased 5-times from 0.3 percent in 1978 to 1.5 percent in 2006; Similarly the risen probability of divorce increasingly encourages more women to invest in additional education and choose majors in marketable fields.

example, in the bargaining model of marriage (which treats marriage as a cooperative game), the threat point is specified as the individuals' maximal levels of utility outside the family, which is, the value of divorce, indicating that the threat point is external to the marriage (Pollak, 1994). By contrast, the threat point is internal to the marriage in the non-cooperative model. For instance, in the separate spheres bargaining model, the threat point is not divorce but a non-cooperative equilibrium defined in terms of traditional gender roles and gender role expectations (Lundberg & Pollak, 1993).

While, there is no doubt that the current utility of a family is directly related to the probability of divorce, what is the direction of causation between them? Does dissatisfaction with the household utility increase the probability of divorce? Or, on the other hand, does greater marital dissatisfaction decrease household satisfaction because of less specialisation? Although a number of studies have discussed the direction of causation between household time allocation and divorce, scholars are not in agreement about the explanations. Some scholars view the causation as the effect of the probability of divorce on household time allocation (Greene & Quester, 1982; King, 1982; Montalto, 1994), other researchers argue that the causation is running from household time allocation to the probability of divorce (G. S. Becker, et al., 1977; Spitze & South, 1985), while others believe that the causation between divorce and household time allocation is bidirectional (Gray, 1995; Iversen, et al., 2005; W. R. Johnson & Skinner, 1986).

Scholars with the first point of view argue that marriage failure has significant effects on each spouse's household time allocation decision. For instance, an increase in the probability of divorce encourages the wife to invest more time in market work as a hedging action against financial loss from divorce. Greater probability of marriage failure reduces the incentive of either partner to invest in each other, and changes the decision of household time allocation of both spouses. However, Weagley, Chan, & Yan (2007) argue that the wife's increased market work time is affected indirectly through her reduction in household work time which is directly caused by the greater divorce probabilities. It indicates that wives' hedging action (spending more time on market production), follows from their reduction in household production, rather than directly through the increase in the possibility of marriage failure. Regarding the second argument, the way each spouse allocates time to market and household production has profound effects on the relationship, and this is especially true for the

dual-earner family which faces more trade-off decisions than the single-earner family. Proponents of the second argument argue that the more time the husband spends on market work, ceteris paribus, the lower the probability of divorce; the more time the wife spends, on average and ceteris paribus, on household work, the less likely is the marriage to fail. The wife's time in market production and the husband's time spent on household work are not significant to the decision to divorce (Weagley, et al., 2007). However, it is worth emphasising that the probability of divorce is not directly affected by engagement in the traditional household roles by both spouses, but a greater skill specialisation based on the comparative advantages of each spouse. Since men, on average, have competitive advantages over women in market production, and women, on the other hand, have competitive advantages over men in household production, the more skill specialisation in the household, ceteris paribus, the greater the bargaining advantage of men and the higher the household share of work by women. Hence, it causes greater total utility and the greater cost of the divorce and hence a lower probability of divorce; (vice versa if women spend more time on paid work or men do more household work) (G. S. Becker, et al., 1977; Spitze & South, 1985; Weagley, et al., 2007).

What factors influence each spouse's time allocation decision? According to Becker's household specialisation pattern, all personal and occupational related characteristics such as age, educational level, training, health status, political capital, occupation, and hierarchical level within occupation are expected to have effects on household time allocation and marriage failure. For example, education is expected to have a positive relationship with market work time. Higher education enhances both market and household productivity (Blau, et al., 2006), but market productivity is expected to improve more. Thus, the spouse with the greater education level should increase their market work hours while the other spouse should increase their household hours to raise total family utility. Greater family utility, ceteris paribus, would increase the cost of divorce, which dissuades a married couple from divorce. Similarly, as age is associated with seniority and experience, it is supposed to have a positive relationship with market productivity. The older spouses who keep participating in the labour market (generally referring to men), will have higher market productivity relative to home productivity, and should therefore invest more hours in the labour market and less in household work. Moreover, by applying a wife's age as a proxy for length of

marriage, Becker, Michael and Landes (1977) found that the probability of divorce declines with the wife's increasing age. Moreover, the number of young children five and younger and the age of the youngest child are another two major factors that have significant effects on household time allocation.

In addition to personal and occupational related characteristics, some internal (to household) factors are often quoted as major components of household time allocation and divorce decisions. For instance, as I discussed earlier, the number of young children and the age of youngest children have negative and positive effects on the mother's labour market outcomes, respectively. Childbearing and childrearing encourage skill specialisation in the household, enhancing the mother's family responsibilities, and strengthens the father's market work responsibility. Home ownership is expected to affect household production positively, because both spouses spend more time on home production (Weagley, et al., 2007). Sharing financial capital such as a home on the other hand, decreases the probability of divorce, since it increases the cost of marriage failure (G. S. Becker, et al., 1977; Spitze & South, 1985).

Income tax is another major consideration of household time allocation decisions. As in most other countries, China applies progressive individual income tax rates[19] (table 2.3.1) (Zuo, 2003): the higher the income, the greater the average tax rates. Thus given the amount of before-tax household income, the dual earner household pays less tax than the completely specialised household; this indicates that to maximise household (after tax) income, both spouses should participate in paid market work rather than complete household specialisation. Moreover, household income or poverty status also significantly affects household time allocation. Compared with rural areas, the number of people living under the poverty line in Chinese urban areas remained lower, but showed an inverse 'v' shape from the 1980s to 1990s; only 3 million (1%) lived under the official poverty line in the mid-1980s. This number increased to 12.4 million (4.4%) in 1995, and then declined to 9.6 million (3.1) by 1999 (Hao, 2001). There is no doubt that both spouses are encouraged or forced to participate in paid market work to provide for subsistence, even though the labour

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[19] The taxable income of the month in this table refers to the amount of a monthly income after deduction of 800 (Chinese Yuan) for expenses or additional deductions for expenses.

market productivity of one spouse is relatively lower than the other. Therefore, an increased level of poverty tends to positively associate with women's labour market participation rate.

Table 2.3.1: Table of Individual Income Tax Rates

(applicable to income from wages and salaries)

Grade	Taxable income of the month	Tax rate (%)
1	Less than 500	5
2	The portion of income in excess of 500 to 2,000 Yuan	10
3	The portion of income in excess of 2,000 to 5,000 Yuan	15
4	The portion of income in excess of 5,000 to 20,000 Yuan	20
5	The portion of income in excess of 20,000 to 40,000 Yuan	25
6	The portion of income in excess of 40,000 to 60,000 Yuan	30
7	The portion of income in excess of 60,000 to 80000 Yuan	35
8	The portion of income in excess of 80,000 to 100,000 Yuan	40
9	The portion of income in excess of 100,000 Yuan	45

Source: (Zuo, 2003)

The discussion on the exclusion of child care duties in household time allocation will undoubtedly lead to an understatement of the wife's share of work. Studies that include child care as a category in family work show that childrearing increases women's overall household work much more than men's (Brink & Groot, 1997; England, 2005), and some studies even conclude that children have no effect on male's home time at all (Lippe, 1992; Millimet, 2000). In accordance with Brink & Groot (1997), mothers in double income families, on average, have the heaviest work load and the least amount of leisure time in comparison to fathers, unemployed mothers, and women without children, because the increased childrearing time by mothers with young children is not solely at the cost of labour supply, but also in leisure time (Kaufman & Hotchkiss, 2003; Lippe, 1992; Millimet, 2000). The differences in average workloads and leisure time are especially pronounced when the

children are under five and women spend more than 24 hours per week on market work. Therefore, as an enormous amount of study has indicated, there is a strong negative correlation between the number of children and the probability of labour force participation by the wife[20], especially for young children under five (Kaufman & Hotchkiss, 2003). In accordance with a recent empirical study on China (Du, Yang, & Dong, 2006), children under five have a significant negative effect on women's labour force participation; children aged 6 to 18, on the other hand, have positive effects on the LFP of women. By contrast, children are constantly and positively associated with men's LFP. Empirical findings in the Chinese labour market are generally consistent with theories from western developed countries.

More importantly, does motherhood affect an employed woman's wages? Some scholars argue that although children have increased the value and importance of household work (including both family and childrearing responsibilities), it just influences the trade off between household and other market and non-market work. The declining marginal rate of substitution of household work raises the time spent on child care and other family works by the mother. The mother's reservation wage and the marginal value of market and non-market work, on the other hand, have not been influenced (Brink & Groot, 1997; Millimet, 2000). In contrast, others predict a negative effect of children on female wages (G. S. Becker, 1985; Budig & England, 2001; Lundberg & Rose, 2000; Waldfogel, 1997a), though the penalty of children on the mother's wage varies among studies since they apply different models and equations. For example, by applying a fixed-effects model and controlling for marital status, experience, and education, Waldfogel (1997a) estimates a wage penalty of six percent per child for the mother. By contrast, her wage penalty is approximately five percent per child in Budig & England's (2001) study which uses a more detailed model and controls for more variables.

With respect to the second argument, considerable evidence shows that women suffer a wage penalty if they have children. First, times spending on childrearing by wives interrupt their job experience and employment (see 'Human Capital' section). Lesser levels of labour market experience and seniority resulting from job interruptions

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[20] Because of the One-child policy, most modern urban families have one child only, and hence, the effects of the number of children on labour force participation and wages rate are not major issues in China.

appear to explain most of the mother's wage penalty, but by no means all of it. Second, firms may assume that women with children are less reliable and more likely to relocate because of job interruptions, and decreasing their on-the-job training investment, with negative effects on their wages (G. S. Becker, 1985). Third, if employers cannot provide sufficient job-protected maternity leave, women may be unable to return to their original job after childbirth, losing the reward of firm-specific training (Waldfogel, 1997b).

Fourth, mothers may switch from higher waged occupations to mother-friendly jobs. According to the theory of compensating differentials, by taking both pecuniary and non-pecuniary benefits into account, competition eventually makes all jobs to have equal value to workers (Smith, 1776). Based on this theory, employers can provide lower wages for jobs that offer more non-pecuniary amenities which workers will trade off against wages. Mother-friendly jobs, therefore, are supposed to be associated with lower wages. However, there is notable controversy on the above theory, many studies having failed to establish the relationship between non-pecuniary amenities and lower wages (England, 2005), some studies even failing to identify more mother friendly characteristics in women's jobs (Glass, 1990; Glass & Gamarigg, 1992). Furthermore, even though the mother friendly jobs characteristics exist, their effects on the motherhood penalty are expected to be weak (Budig & England, 2001; Kaufman & Hotchkiss, 2003). More interestingly, as Budig and England (2001) indicated, mothers are no more likely than non-mothers to be in female jobs and there is no evidence that women choose female jobs because they are more mother friendly. Hence, overall, the effects of fertility and childrearing on occupation segregation are expected to be weak.

Fifth, it is argued that mothers are less productive than non-mothers because childrearing makes them exhausted or distracted at work. This argument is based on the assumption that non-mothers spend their non-employment hours in leisure rather than childrearing or other child related household work (unless they are female relatives). Mothers, on the other hand, spend more time in child care and child-related household work, which requires much more energy. Thus, compared to mothers, non-mothers are expected to be more productive as they have more energy for paid work (G. S. Becker, 1991; Brink & Groot, 1997; Kaufman & Hotchkiss, 2003; Millimet, 2000).

Sixth, employers may discriminate against mothers. Statistically, discrimination may occur through such aspects as career interruption, employment, on-the-job training, and occupation segregation. For instance, assuming that a mother will experience one or several job interruptions for childbearing and childrearing, an employer may believe that she is less reliable and productive, and will invest less on-the-job training and job tenure in her, negatively affecting her wages. The effects of discrimination on the expected costs and likelihood of women's career interruption lead to the discrimination to which women are subjected, and on the other hand, the linkage between childrearing responsibilities and occupation segregation through statistical discrimination is very weak (England, 2005; Polachek, 1985). 'Taste' discrimination is another major discrimination against women and mothers. In the taste model, they are assumed to be as productive as other employees, but they still face discrimination because employers find it distasteful to employ them. Sometimes, the dissatisfaction comes from co-workers or customers, and employers find it expensive to offend them (Budig & England, 2001).

Finally, the association may not really be penalties from or consequences of motherhood; the relationship between motherhood and wages may be spurious instead of causal. It is possible that women with lower earnings are more likely to have children early and frequently. Those with lower human capital may prefer to have children early because they yield more satisfaction compared to a bleak career prospect. Also, women who pay less attention to wealth have a higher probability of having more children, trading earnings for non-pecuniary amenities (mother-friendly benefit). Women with higher wage potential (career-oriented) are more likely to remain childless. Thus, although the presence of children and childrearing are associated with lower wages, children do not directly cause lower wages (Lundberg & Rose, 2000). Whether there are any exogenous characteristics involved is the key to indentifying the relationship between earnings and motherhood. If any characteristic that is exogenous to and have effects on both fertility and earnings be involved, the causation is from earnings to motherhood, and vice versa (Budig & England, 2001).

People may ask why we should care about the wage penalty for motherhood. This is relevant to the larger issues of gender inequality, because the 'price' of being a mother

is rarely experienced by men[21]. Lower earnings for employed mothers during child rearing is actually only the tip of the iceberg. The wage penalty for motherhood will not just cause lower pay for mothers at one point in time, but also affects other gender inequalities such as private pension income and women's bargaining power within the family[22] (Budig & England, 2001).

For men, as we discussed above, marriage is generally positively associated with income, mostly due to the benefits of specialisation in the family, the assistance of the wife's education and a higher human capital accumulation rate. For fathers, the effects of childrearing and the number of children on men's wage are much less controversial. Since the wife is more likely to perform most of the childrearing and household tasks, childrearing has little or even no effect on husbands' home-time. Men with children are assumed to be more productive, accumulating more experience, and becoming more reliable to firms because of their increased family responsibility and greater specialisation in the family, which have positive return on male's wage and job tenure and could increase firms training investment on them. Fatherhood, therefore, directly and indirectly increases father's earnings (On the other hand, even if firms make a similar assumption about women, these positive returns have been offset by the negative effect of children in terms of energy and flexibility) (Bian, 1994b; Lundberg & Rose, 2000; Millimet, 2000).

Nonetheless, husbands with employed wives suffer a wage penalty compared to men who are the sole earners and a wife's employment could be the result rather than the cause of the husband's lower earnings[23]. It is consistent with "income effects" – the change in hours of work of one spouse resulting from a change in income of the other, and "cross-substitution effects" – the change in hours of work of one spouse resulting from a change in the wage rate of the other, where declines in men's real wages/income are expected to motivate women's employment and market work time

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[21] Sole fathers are possibly an exception because they bring children up on their own.

[22] Regarding to these six factors we discussed above, mothers are expected to suffer lower lifetime earnings as well.

[23] Earnings comparison among men are not in the analytic interest of this paper, and thus given no further attention, see (Hotchkiss & Moore, 1999) for more discussion on this issue.

(Kaufman & Hotchkiss, 2003). However, studies found that declines in men's real income cannot explain increased women's employment and market time (Brink & Groot, 1997; England, 2005). In Cohen & Bianchi's (Cohen & Bianchi, 1999) point of view, the increased women's employment and market time, on the other hand, are explained more by the wage rate of women themselves, rather than the income or the wage rate of their husbands.

Finally, in addition to household time allocation, labour market participation, and wage rate, by ignoring any endogenous fertility[24], children also have a significant positive and negative effect on male and female job tenure, respectively. The positive effects of children on men's market work hours and productivity are also major causes of the positive effect of children on male job tenure. The negative effect on female job tenure, on the other hand, is consistent with the explanation that children cause job interruptions (Kaufman & Hotchkiss, 2003; Millimet, 2000).

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[24] As we discussed above, the results are apparently different if endogenous fertility is involved, see (Millimet, 2000) for more discussion on effects of endogenous fertility on job tenure issue.

2.4: Social and Political Capital

Social Capital

Since the economic transition, 'guanxi' is an efficient method to get promoted, a good job, a business or contract, or a better wage rate. In many cases, guanxi appears to be more important compared with other personal capitals, such as education attainment, experience, and so on (Knight & Yueh, 2002; J. Liu, 2007). What is guanxi? It resembles the concept of 'social capital', which in Bourdieu's (1992, p. 119) words: "is the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition", or alternatively, "the investment and use of embedded resources in social relations for expected returns" (Lin, 2000, p. 786). Different from other kinds of capital, social capital has greater ability to convert into other forms of capital. In China, guanxi (as social capital) showed clear and strong intention to convert into economic, political, and symbolic capital (Gold, Guthrie, & Wank, 2002). However, differing from the generalised notion of social capital in western society, guanxi imparts special significance to interpersonal relations in China. As Yang (1994, pp. 1-2) argued: " guanxi is based implicitly (rather than explicitly) on mutual interest and benefit. Once it is recognised between two people, each can ask a favour of the other with the expectation that debt incurred will be repaid sometime in the future". Clearly, rather than a simple issue of social embeddedness and social connections, the core notion of the guanxi system in China is "reciprocal obligation and indebtedness", which are often created through gifts, meals, and favours. Guanxi, therefore, is the basis of a gift and favour economy which has specific rites and rules attached to it[25] (Gold, et al., 2002; M. M. Yang, 1994).

In accordance with Putnam (2001), social capital can be divided into two concepts, those of bonding and bridging social capital. The theoretical distinction between them is that the former refers to forming social ties with people in similar socioeconomic positions (homogeneous groups) such as family members, and the latter one to social

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[25] As Knight and Yueh (2002, p. 5) reviewed, such phenomenon is attributable to several special factors in current China, which are "inconsistent enforcement of laws; risk reduction in an uncertain socio-politico-economic environment; risk spreading in an economy characterised by shortages; and information sharing in imperfect markets".

ties with non-kin people (diverse social groups) such as friends and acquaintances. Bonding social capital is mainly used to support the status and satisfy the safety need, and have positive effects on members within the group (Kadushin, 2002), but negatively affects society as a whole, at least for economic growth (Beugelsdijk & Smulders, 2003). On the other hand, bridging social capital is helpful to satisfy efficacy and enhance innovation (Kadushin, 2002), supports gender equality, is good for economic growth, and positively related to individual's wages, upward mobility in the work place, economic performance, creativity, social trust, and happiness (Beugelsdijk & Smulders, 2003; Burt, 2005; Growiec & Growiec, 2010; Kadushin, 2002; J. Liu, 2007). Participating and maintaining social networks is both time-consuming and comes at the cost of working, learning, and leisure time, and therefore it tends to be negatively associated with economic growth. However, an intercommunity (bridging) network could generate 'trust' which reduces the incentive for rent seeking and cheating activities, but an intra-community (bonding) network could not protect members against such activities. As a consequence, bridging social capital may positively correlate with economic growth; bonding capital, on the other hand, could reduce the economic growth rate. Whether bridging social capital enhances economic growth, depends on the expense of participation and maintenance of such networks. In addition, bonding social capital has a negative effect on the intercommunity network. As Fukuyama (1995, p. 56) argues "the strength of the family bond implies a certain weakness in ties between individuals not related to one another". It indicates that the greater the bonding social capital a person has, the fewer bridging social ties they can obtain[26].

In addition to the two concepts of social capital, there are two processes by which inequality can occur, those of capital and return deficits. In accordance with Lin (2001), 'capital deficits' refer to the shortage of access to social capital. Compared to men, women are disadvantaged in gathering useful information and opportunities for their career, indicating that women suffer capital deficit relative to men. The difference is caused by both poor quantity and quality of women's social capital resources.

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[26] Discussions on the relationship between social capital and community level factors are not in the analytic interest of this thesis, and thus are given no further attention. Further discussions on this issue can be found in Beugelsdijk and Smulder's (2003) study.

First, certain group (female/male) clusters are at different socioeconomic positions, having unequal opportunities to access to social network. Moore (1990) demonstrates that women have a larger number and more different types of kin (bonding social capital) and less diversity of non-kin (bridging social capital) ties with their social networks than men, even if they are on a similar social hierarchical level to those of men. Men's social networks, by contrast, have fewer kin and more non-kin. Furthermore, childrearing not only contributes to gender inequalities in workload and earnings (see 'Family Circumstances' section), but also causes some gender disparities in social capital resource. Since childrearing has significant negative effects on women's labour market work and has no effects on men's paid work, men and women are placed in different social circles and hierarchical positions with regard to flow of information and other resources in social networks (Munch, Mcpherson, & Smith-Lovin, 1997).

Second, people are more likely to interact and share sentiments with those in a similar homogenous group and with similar socioeconomic characteristics. In the case of gender, Beggs and Hurlbert (1997), and Brass (1985) found that women tend to be affiliated with mostly female members, and they are not well integrated into men's networks, and vice versa. Sex segregation in occupational social network is also detected by many studies, where males generally associate in networks with other males, and female workers associate with other females (Lin, 2000, p. 788). Although Burt (1998) shows that legitimacy is more important than gender in acceptance in a group, his argument does not necessarily conflict with the above conclusions. At least, there is no doubt that gender is one of the major factors that affect one's acceptance into a network.

To conclude, given the higher the rank of the social capital, and the better the jobs that could be obtained, women, who have less social capital on average than men are trapped in a vicious circle of low-paid, smaller internal markets, and worse working conditions which provide only further poor social connections (J. Liu, 2007). Parks-Yancy (2006) named this vicious circle 'accumulative effects'. Men, on the other hand, were offered the potential of gaining additional high quality social connections from their relatively better and higher level jobs.

'Return deficits' refers to a distinct return rate for accessing social capital between different social groups. As Leicht and Marx (1997) demonstrate, jobs found through same-gender referrals are hierarchically higher than those found through cross-gender referrals, and hence, women may receive fewer rewards from using the same social capital resource as that of men because of homogeneity. Lin (2001), on the other hand, argues that neither men nor women suffer return deficits for their careers, at least in terms of earnings. Greater bonding social capital allows women to use their male family members for bridging social capital resources, while men often utilise other men for resources; hence, women obtain similar returns for using social capital to those of males. However, although family ties tend to be gender-heterogeneous, they also tend to be homogeneous in resources, which indicates that family ties may or may not provide greater social networks for females[27] (Hanson & Pratt, 1991).

To conclude, men have greater concentration on and access to bridging social capital resources especially in upper-level connections and social network homogeneity. By contrast, women have more kin-social resources and are affiliated with disadvantaged social networks. Since access to and use of social capital resources are positively associated with employment, career development, earnings, and even happiness, men, therefore, could obtain better labour market outcomes than women.

There are various beneficial effects in the labour market attributed to social capital, including better access to and exchange of information, decreased transaction costs, enhanced enforcement of contracts, increased efficiency, improved trust, and so on (Beugelsdijk & Smulders, 2003; Knight & Yueh, 2002). Social capital was found to be positively associated with earnings and other career-related issues. Among them are the job ladder, job tenure, working conditions, job search, re-employment, and expressive returns (for example, better mental health, more happiness) (Growiec & Growiec, 2010; Lin, 2000; Parks-Yancy, 2006). Turning especially to the Chinese labour market, guanxi is a major determinant of employment success and earnings income. In accordance with Bian (Bian, 1994a, 1994b), over half of the workers in the state sector had used guanxi in hiring and job switching progress. These findings are consistent with Oi's (1989) study which finds that social capital is important in

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[27] More discussion on the relationship between family ties and social class can be found in Scott's (2002) work.

employment and post-employment in China[28]. Lee (1998) and Montgomery (1991) have studied the effects of guanxi on employment and earnings from the firms' aspect, and they found that social contacts could benefit both employers and employees. On the one hand, using referrals from current employees in recruitment improves firm information, reducing the chance of hiring undesirable workers and resulting in a higher profit for the firm. On the other hand, the employees who have the requisite social contacts to make referrals are often associated with higher wages. Lee and Montgomery's conclusion is consistent with other empirical studies; for instance, Knight and Song (1999) also found that the use of guanxi could improve information of both recruiting firms and searching workers in an imperfect labour market. Positive relationships between guanxi and promotions and between guanxi and incomes of employed persons have also been identified in the studies of Bian (1994a), Knight and Yue (2002), and Lee (1998). A few scholars, however, questioned the direct relationship between social capital and earnings. For example, Franzen and Hangartner (2006) claim that social ties may not necessarily be associated with wages, but with the non-pecuniary characteristics of the job such as better working conditions and impressive returns.

The basis of guanxi is attributed to both primordial traits such as ethnicity, kinship, and native place, and achieved characteristics that include attending the same school, serving in the same military unit, doing business together, and so on (Gold, et al., 2002). Meals and gifts are common and effective methods to accumulate and enhance those ties (Kipnis, 1997; Yan, 1996). As I discussed above, gender disparity in social capital exists worldwide, and most studies conclude that males hold the advantage over women in respect to social capital (Campbell & Rosenfeld, 1985; Lin, 2001; Moore, 1990). In a 1998 survey in eighteen Chinese cities, Lin (2001) found that women have considerable less social capital than men, indicating a serious gender social capital inequality. Since previous discussions have concluded the reasons that attribute to this gap, I thus, turn to the question: how do women access greater social connections in China? Liu (2007) has investigated the three most commonly used channels. First, capitalising on the connections of their natal family members, mostly

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[28] Social capital is also positively associated with labour market outcomes in western countries. For example, Petersen, Saporta and Seidel (2000) found that drawing on formal methods to access a job often causes a lower level position and less pay than using social capital for employment in the US.

through their fathers, is the primary way for women to access powerful social connections. A recent study has found that parental social networks are important for labour market outcomes, especially for labour market entrants (Knight & Yueh, 2002). However, if a woman failed to be 'born with a silver spoon in her mouth', marriage to a powerful man will be her chance. As I discussed earlier (see my "Family Circumstances" section), "assortative mating" has been specially enhanced because personal connections become increasingly important for advancing individuals' positions, and marriage is absolutely one of the best channels for women to gain access to advancing social networks. Evidence suggests that gender outcomes varied with the strength of social capital. On the one hand, people with less social capital are more vulnerable to redundancy and no reemployment, especially for women in households with lower social capital husbands (Ding, et al., 2009; J. Liu, 2007). On the other hand, women with powerful husbands are less vulnerable to redundancy, easier to be re-employed, and even more, those women can often obtain other advantages from the greater social network, such as obtaining easier work or positions, gaining higher wages on the same position, and have better career prospects (J. Liu, 2007; Y. Song, 2007). Establishing a good relationship with leaders or managers of the enterprise or organisation is another way to reinforce social connections. However, social ties accessed through this method have two limitations. One is that people will lose social capital if their leaders or managers are transferred away. This phenomenon is particularly significant in state-owned enterprises (SOEs) since leader transfers in SOEs are common (J. Liu, 2007). The other limitation is known as 'immoral', regarding traditional Chinese culture (Confucianism); it is immoral and suspect, for a married woman to establish a close relationship with other men, and those who do so with male leaders and managers will be exposed to gossip.

Similar to the access to social connections, Chinese men and women also show distinct perspectives on the use of social capital after they earn access to social connections. Males use their social connections mainly for job search and upward mobility (Bian, 1994b); by contrast, women normally use their connections for the purpose of avoiding shift work and smoothing the relationship between work and family duties (J. Liu, 2007). It is worth emphasising that Liu's study is concentrated on middle aged Chinese women, most of whom have experienced the 'culture revolution', meaning they are supposed to have lower educational attainment, and

started their first job in the planned economy phase. Those women are apparently distinct from the modern female who has higher educational attainment and works in the market economy. Thereby, Liu's arguments may not be applicable to those modern Chinese females, or even the Chinese labour market as a whole. As I discussed above, guanxi is an effective way to convert social into other forms of capital in China, and it is widely used to obtain economic interest since the economic transition. Given the strong positive relationship between guanxi and labour market outcomes, Liu's findings establish the fact for all female workers in the Chinese labour market, that employment, promotions, and earnings gaps between genders are supposed to be larger in China than those countries in which both men and women applied their social capital for job search and upward mobility purpose, net of controls. To diminish gender disparity in the labour market, it is necessary for women to invest more in guanxi to increase the benefits actually mobilised on their behalf, and more importantly, they need to use those ties for job search and upward mobility rather than family purpose.

Political Capital

Since the Chinese Communist Party (CCP) has complete control over the organs of state, political connections and networks are often signalled by membership in it (Knight & Yueh, 2002). Membership not only involves acceptance of Party disciplines but also provides members with additional information, contacts, and influence, which are helpful for promotion and reward in various areas such as the labour market. Given the importance of the CCP in China's society, access to membership is one of the most promising indicators of social capital. The positive relationship between Party membership and wages is well known. In pre-reform China, Party members were significantly more likely than non-members to be promoted to positions of authority, to receive party sponsorship for further education and job training, and to receive high wage and in-kind incomes (Knight & Yueh, 2002; Shu & Bian, 2003). The impact of Communist Party membership on labour market earnings attainment during the reforms, however, is less consistent from one study to another. Using the dataset from Shanghai and Guangzhou in the mid 1990s, Cao and Nee (2005, p. 482) argue that CCP membership has "ceased to be a valuable

asset" in income attainment. This finding is consistent with Knight and Yueh's (2002) conclusion: since Party membership is more important under a central planning system and in SOEs, continued economic transition, from central planning to market-oriented system, and SOEs restructuring (privatisation) declined in its importance and effects in the labour market. On the opposite side, two previous studies on the 1988-1995 CHIP dataset conclude that the effect of political capital on earnings experienced an increase from 1988 to 1995 (Gustafsson & Li, 2000; Shu & Bian, 2003). A similar result was identified by Appleton, Knight, Song and Xia (2008): the CCP membership wage premium increased sharply between the late 1980s and the late 1990s. Analysis of the changes of the effects of Party membership on earnings, however, is not in the analytic interest of this thesis and I thus, give it no further attention. Nevertheless, discussions of those studies imply that there is an intrinsic positive effect of CCP membership on earnings attainment in both the pre- and post-reform phases. In addition to the earnings return to the CCP membership, the disproportionate allocation of Party membership between men and women is another major issue. In the 1980s and 1990s, 15% to 20% of the working adults in urban China were CCP members and the male to female ratio was as large as 2:1 (Shu & Bian, 2003). Unclear income returns to the CCP membership and the huge difference on the membership allocation between genders bring us a few questions: How much of the gender gap in earnings was attributable to CCP membership by the year 2000? Is the gap actually due to the disproportionate allocation of Party membership to men, or different income returns to Party membership between genders, or both? This study shall shed light on the question.

Apart from the Chinese Communist Party that is currently in power, there are another eight non-communist parties in China, which are neither parties out of office, nor opposition parties, but friendly parties that have coexisted over a long time with the CCP and they have established cooperative relations with the CCP to differing extents. In the Party's words, the eight non-communist parties participate in consultations and decisions concerning important issues in the state's political life. In detail, some representatives of the non-communist parties were elected deputies to the National People's Congresses (NPC) and members of the committees of the Chinese People's Political Consultative Conference (CPPCC) at various levels, and many members of the non-communist parties hold leading posts on the standing committees

of the people's congresses, the committees of the CPPCC, government organs, and economic, cultural, educational, scientific and technological departments at various levels (China Culture, n.d.). Since non-communist parties participate in government and political affairs, their membership should be viewed as a part of political capital as well, although it has never been studied in previous empirical research. However, due to the limitation of the dataset, non-communist party membership cannot be applied as an indicator of political capital in this study, but I do recommend further studies.

More importantly, Knight and Yueh (2002) argued that the relationship between social capital, CCP membership and earnings is more significant than that between human capital and income. To be precise, by using a survey dataset that covers six provinces and 13 cities in 2000, they identified an approximate ten percent income premium for each of social capital and Party membership, almost five times larger as the effects of education (measured as one additional year of education). Although the degree of impact of Party membership on earnings income is less consistent from one to another, most studies have concluded a greater effect of CCP membership on wages than one additional year of school. Nevertheless, the gaps between them is much smaller in these studies than what Knight and Yueh indentified (Appleton, et al., 2008; Cao & Nee, 2005; Gustafsson & Li, 2000; Shu & Bian, 2003). Different time periods, geographic scales, and indicators of inequality and well-being that have been implied by those empirical studies might be the principal reasons for this inconsistency. Moreover, direct comparison between the effects of social capital and education on earnings, however, received less attention. Further studies in this area are suggested. Furthermore, social capital also showed significant effects on employment and earnings in other countries (Knight & Yueh, 2002; Lin, 2001), but cross-comparison between China and other countries remains absent. Since guanxi in China is somewhat different from social capital in western countries, cross-comparison could provide an overview as to whether social capital plays a more important role in the Chinese labour market than in others. This may be a valuable topic for further research. In this thesis, I am going to examine the effects of both CCP membership and social capital (measured as whether the person used any social connections when they obtained their current job) on wage rates. Based on the approach and the database that is applied by this thesis, the questions arise: what are the effects of social capital and CCP

membership on earnings? And how large are the gaps (effects on earnings) among social capital, CCP membership, and education? This thesis will shed light on these issues.

2.5: Region and City Size

Region

Numerous studies have found that China has experienced rapid growth since the open door economic transformation in 1978. This rapid growth, however, is at the expense of equality, leading many issues related to regional disparities, such as greater income and economic development inequalities among and within regions and provinces. The Gini coefficient of China increased sharply from 28.2 in 1981 to 45.5 in 2001 (Huang, et al., 2003; Pedroni & Yao, 2005; The World Bank, 1997), indicating a growing income inequality in China. This growth could be caused by either greater inter-regional or intra-regional income divergence, or more possibly, by both of them. In fact, under the effects of regional characteristics and foreign colonialism, the coastal regions had already become more economically developed than other regions – interior, west, and north-east when the People's Republic of China was founded in 1949 (Lu & Wang, 2002). Furthermore, the Chinese Government continued this concentration after economic reform. This geographically biased economic reform continued to benefit China's major regions unequally, widening the income gap between coastal and other regions (Ho & Li, 2009; Huang, et al., 2003; Q. Li, 1999). Regional wage rate differentials may also arise from other reasons, some of them related to population variables, such as city size. Nevertheless, many scholars believed that the effect of city size on wage rate is much smaller than that of the region (Huang, et al., 2003; Soroka, 1983). The effect of region and city size on income, therefore, is a worthwhile topic to investigate.

Economic transition from central planning to a more market-oriented economy indeed increased income inequality at the household level. However, contrary to what the government desired, the small portion of the population who became rich first during the reform period did not act as models for nor help the poor. Instead, the income disparity at the household level actually enlarged during the reform phase. The phenomenon, however, appears again in regional inequality. In 1978, the Chinese Communist Government began to shift its emphasis from centralisation and equality to "the role of market mechanisms in resource allocation, decentralisation, and efficiency in economic decision making" (Huang, et al., 2003, p. 274). To be precise, China started to promote policies favouring foreign investment and export-oriented

international trade (Guthrie, 2006). Based on regional characteristics such as infrastructure, economic base, and geographic locations, the coastal areas are more likely than other regions of China to promise a higher rate of return on investments, and the government therefore started to concentrate much more on them. Furthermore, while the central government had established many special economic zones and cities in south east coastal areas since the early 1980s, by contrast, no special economic zones (cities) were established outside those regions until 1992, further enlarging differences between coastal and other regions (Guthrie, 2006). In accordance with a dataset from Hsueh and Li (1999 - table 2), the average provincial annual growth rate per capita GDP in the reform period (1978-1997) was twice as high as that in the pre-reform period (1952-1977). In the reform period, per capita GDP grew at 9.09% per annum for all regions of China, and at 10.88% per annum for the coastal provinces. Except for Shanghai, coastal provinces held the highest growth rate in GDP per capita in this period. This empirical evidence shows that although all regions in China had experienced apparent economic development in the reform phase, at the expense of other regions, the coastal provinces achieved much greater success[29] (See Table 5-1 and Figure 5-1). These findings are consistent with the Chinese Government's announcement: "since the adoption of reforms and open-door policies, we have encouraged some regions to develop faster and get richer, advocated that the richer should act as model for and help the poor. But for some reason, regional economic inequalities have widened somewhat" (People's Daily, 1995, p. 4). With respect to regional income inequality, by calculating the Gini coefficient for China and its three regions: Eastern, Central, and Western from 1952 to 1997, Zhang, Liu and Yao (2001) identified an increased income disparity in China, especially after the initiation of economic reforms. The inequality varies among regions, showing the Western and Eastern regions with the lowest and highest Gini coefficients, respectively. This finding is consistent with official statistics and other recent empirical studies which demonstrate that the Gini coefficient of China experienced a remarkable increase since 1981. The coefficient expanded from 28.2 in 1981 to 38.8 in 1995 and to about

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[29] The issue of regional inequality in China has been widely studied from both a microeconomic and a macroeconomic perspective (B. M. Fleisher & Chen, 1997; Jian, Sachs, & Warner, 1996; Raiser, 1998; Y. Wu, 1993, 1995). Particularly, these studies highlight the growing gap in income levels, income growth rates, and productivity growth between the coastal and interior provinces in the post-reform period.

45.5 in 2001 (Huang, et al., 2003; Pedroni & Yao, 2005; The World Bank, 1997), indicating an increased income disparity in China.

Table 2.5.1: Information on Regions and Cities (studied in this thesis)

Province (City)	Region	Average province annual growth rate of Per Capita GDP		City Population (Million)
		Pre-reform Period 1952-1977	Reform Period 1978-1997	
Shanghai	Coastal-Southeast	7.09	8.35	23
Fujian (Fuzhou)	Coastal-Southeast	4.18	12.64	6.83
Hubei (Wuhan)	Interior	4.41	9.64	9.1
Shanxi (Xian)	Interior	4.73	8.16	8.38
Liaoning (Shenyang)	Northeast	7.4	7.88	7.76
Average		5.56	9.33	11

Source of data: Pedroni and Yao (2005) and various of City-Government Website (Bureau of Statistics of Fuzhou, 2010; Bureau of Statistics of Shenyang, 2010; Bureau of Statistics of Wuhan, 2010; Bureau of Statistics of Xian, 2010)

Figure 2.5.1: Real Per Capita GDP Regional Ratios to Coast
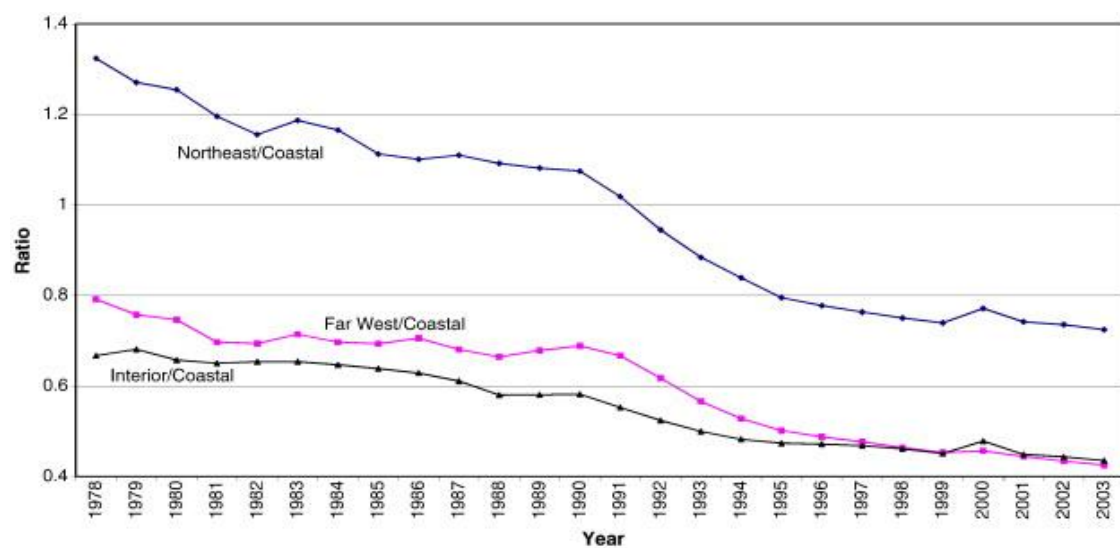
Sources of data: various years of the China Statistical Yearbook and China Data Online (2011)

The widened economic gap between and within regions has often been cited as the major source of regional income divergence. There is, however, considerable controversy on whether the inter-regional income inequality in China has widened or narrowed since the economic reform. On the one hand, Young (2000) and Park, Song, Zhang and Zhao (2008) argue that although China as a whole has liberalised international trade, because of reasons such as differences in degrees of openness to trade, local polices, and geographic characteristics, inter-regional trade has become more restrictive in the reform phase, and therefore per capita incomes among regions have been widening since the reform. This result is consistent with the pronouncements of the Chinese Government and the UNDP. Furthermore, by using a dataset that covers a longer period of time, Zhang, Liu and Yao (2001) found that the regional income gap widened much earlier at the beginning of the reform, because the Cultural Revolution had reduced the productivity of the central region. The reform accelerated the upward rate of the coastal area and as well as downward rate of the western areas in terms of relative regional per capita income. On the other hand, some empirical studies come to the opposite conclusion on the regional per capita income after the economic reform. Jian, Sachs and Warner (1996), Chen and Fleisher (1996), and Raiser (1998) demonstrated a widened regional income inequality from 1952 to 1977 (reinforcing the conclusion of Zhang, Liu and Yao: the central planning system added value to the unevenness in regional income), but was followed by a convergence of per capita income among regions during the reform period. The principal reasons for this inconsistency, as demonstrated by Fan (1997) and Hansen (1995), are different time periods, geographic scales, and indicators of inequality and well-being that have been implied by those empirical studies. A more recent empirical study by Lu and Wang (2002) has actually formed a third conclusion. They argue that inter-provincial and inter-regional disparity experienced a decline from 1978 to 1990, but started to rise again after 1991. This finding is consistent with Huang, Kuo and Kao (2003) and Lee (2000). In Huang, Kuo and Kao's study, more than half of the total regional inequality is attributed to inter-provincial divergence throughout the 1990s, accounting for 63.2% of the total regional disparity in 1991, a number that rose to 73.2% by 2001. In his study, Lee points out that the primary source of income inequality had shifted from intra-provincial to inter-provincial, and from within the coastal region to between regions. The shifts, however, are caused by both declined intra-provincial inequality and widened inter-provincial disparity. Just as Zhang, Liu

and Yao stated: the enlarged inter-provincial and narrowed intra-provincial income gap implies that China's regions "were converging to their own specific steady states. In other words, China's provinces were re-forming into different income clubs" (Z. Zhang, et al., 2001, p. 256).

It is worth emphasising that controversy on changes of the inter-regional income gap before economic reform and the sources of the gap does exist. For example, although Pedroni and Yao (2005) found that per capita incomes among regions have been widening since 1978, they argued that the persistent regional income divergence is not attributed to those commonly accepted patterns (Park, et al., 2008; Shu, et al., 2007; Young, 2000), such as geographically-oriented, income clubs classification, and the degree of openness to international trade. Rather, they believed other unique features of China's experience may be important in explaining the divergence (however, they did not demonstrate what those unique features are). Opposite to findings by Lee (2000), Huang, Kuo and Kao (2003), and Zhang, Liu and Yao (2001), Pedroni and Yao (2005) indicated that differences within various regional and political sub-groupings are the primary source of regional income inequality. In addition, they argue that regional income disparity has been converging during the pre-reform period before 1978, questioning the findings of previous studies (Chen & Fleisher, 1996; Jian, et al., 1996; Raiser, 1998; Z. Zhang, et al., 2001).

The role of foreign direct investment (FDI) on regional income has been widely discussed among scholars. It is commonly accepted that FDI could potentially bring in new production and managerial technologies, positively associated with wages. A recent study, however, found that the effect of FDI varies across the provinces based on the types of FDI. Import-oriented FDI emphasises skill-based technology, it increases and declines the demand for skilled and unskilled workers respectively, and hence, raises and lowers the wages of workers in industries that rely more on skilled and unskilled workers, enlarging the wage premium and industrial differential. Export-oriented FDI, on the other hand, represents a demand shift in favour of unskilled labour and has the opposite effect (Owen & Yu, 2007). A less developed region or city may represent a higher proportion of the population employed in the first industry, a smaller proportion worked in the second and tertiary industry, fewer and poorer infrastructure, and a lower GDP per capita, which are often associated with less-advanced technology and lower skill premiums. In turn, the region or city attracts

more export-oriented FDI than the import-oriented one, widening the income gap between well and less developed regions and cities. In China, foreign investment reached $550 billion from more than 250,000 foreign-invested enterprises by the end of 2004. In 2003, foreign owned and foreign-Chinese jointly owned enterprises accounted for 11 percent of the total fixed assets investment, 28 percent of industrial added value, 55 percent of the total export volume, and 10 percent of total non-agriculture employment of China (People's Daily, 2004). These figures show that foreign investment and foreign-invested enterprises have become an essential part of China's economy; however, more than half of China's total exports are attributed to foreign-invested companies, indicating that export-oriented FDI is a major component of foreign investment. The direction of FDI is also affected by other geographical and political factors, such as proximity to a transport hub, degrees of openness - whether the region or city is (or has) a special economic zone and free trade area, local policies, local average educational attainment, and so on (B. Fleisher, Li, & Zhao, 2010; Park, et al., 2008; Young, 2000).

City Size

The existence of regional income differences has long been established, as well as income differences by city size. It is widely documented that wages in economically developed regions exceed those in undeveloped areas, and wage rates rises with city size (Baum-Snow & Pavan, 2009; Echeverri-Carroll & Ayala, 2011; Segal, 1976; Soroka, 1983). Regarding city size, many studies have indentified that larger cities are often associated with urban wage premiums. By controlling for personal capitals such as age, educational attainment, and labour market experience, the wage premium is ranged from 0.12 to about 1 percentage for every additional 100 thousand people in the local labour market (Baum-Snow & Pavan, 2009; Echeverri-Carroll & Ayala, 2011), and a 0.78 to 8 percentage wage raise for each doubling of city size (Combes, Duranton, Gobillon, & Roux, 2010; Segal, 1976; Soroka, 1983). Why are larger cities positively associated with wage rates? Rather than increasing returns to the economies of scale in city size, Segal (1976) argues, the "agglomeration effect" enjoyed by large metropolitan areas is the primary reason. The significant net benefits of agglomeration (the benefits from agglomeration exceeding its offset congestion costs) in large cities

changed the constant term of the production function, they led to an upward shift of the production function for those cities. This implies that units of labour and capital are more productive in these cities, and hence, result in higher wage rates. However, one may ask how does the agglomeration effect contribute to production in large metropolitan areas? One explanation is greater knowledge and human capital spill-over in larger cities, because it is easier for workers to learn from each other and transfer knowledge between firms when an industry is spatially concentrated (Wheaton & Lewis, 2002), and firms from different industries may also benefit from learning spill-over across industries (Ellison & Glaeser, 1997). Industry agglomeration is thus also known as 'localization economies'[30]. When the effect widens to cross industries from a particular industry, it becomes 'urbanization economies', where more than one industry enjoys the benefits of locating in a metropolitan area. These two concepts, in the words of Gleaser, Kallal, Scheinkman and Schleifer (1992), are a Marshall-Arrow-Romer (MAR) specialisation externality, which occurs within a specific sector; and a diversity (Jacobs) externality, which operate across industries.

The MAR[31] externalities predict that industries concentrated in a region could help growth of that industry and allow individual firms (in that region) to benefit from such concentration, because specialisation and proximity promote the intra-industry transmission and exchange of knowledge, ideas, and information, facilitates innovation, reduces labour market pooling costs, and declines the transport costs of inputs and outputs. Knowledge, ideas, and information spill-over can occur either through the direct exchange or indirect movement of qualified employees among firms (He & Pan, 2010). Such localisation knowledge externalities between firms, however, can only occur among firms in the same or similar industries; in other words, transmission of knowledge spill-over cannot take place across industries (Beaudry & Schiffauerova, 2009). It is important to bear in mind that fierce intra-industry competition for labour, materials, land, transport, and market, which are harmful to the growth of the industry, may occur, if there are too many firms from an industry

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[30] It means firms in a specific industry are more productive when they are located in the same city / metropolitan area as they can benefit from knowledge / learning spill-over from each other.

[31] The concept was put forward by Marshall (1989), Arrow (1962), and Romer (1986). Their works were later formalized by Glaser et al (1992) and became well known as the Marshall-Arrow-Romer (MAR) model.

concentrated within a certain region (J. Wang, 2001). Moreover, as Glaeser et al. suggested, local monopoly industries and firms can obtain greater benefits from specialisation externalities than industries and firms from a local competition market, because "local monopoly restricts the flow of ideas to others and so allows externalities to be internalized by the innovator" (Glaeser, et al., 1992, p. 1127).

Jacobs (1969), on the other hand, argued that industrial diversity in an area is the most important driving force of the long-run economic growth, because "the greater the sheer number of and variety of division of labour, the greater the economy's inherent capacity for adding still more kinds of goods and services" (Jacobs, 1969, p. 59). She believes that the primary sources of knowledge spill-over are external to the industry within which the firm operates. Industrial diversity fosters opportunities to imitate, share and recombine ideas, facilitates search and experimentation in innovation, and promotes exchange of skills among sectors with close technologies. Furthermore, since cities have the greatest diversity of knowledge sources, Jacobs also believes that urbanisation is a major source of economic growth. In addition to encouraging industrial diversity in a region, urbanisation also benefits firms with a well functioning infrastructure of transportation and communication, better access to specialised services, and the proximity of markets (Beaudry & Schiffauerova, 2009).

In addition to MAR and Jacobs's models, there is actually another type of externality which is referred to as 'Porter's model' (Porter, 1990). Porter argues that competition within a market is positively associated with incentives to innovation, in turn increasing the rate of technical progress, productivity, and economic growth. It questioned the finding by Glaeser et al. that local monopoly is better for growth than local competition. Furthermore, Porter found that knowledge spill-over occur mainly within an industry, which indicates that intra-industry (specialisation) spill-over are the primary source of knowledge externality, consistent with the MAR hypothesis.

Many researchers have tried to explore the types of dynamic externalities for industry growth. For example, exploiting a dataset composed of the six largest industries in 170 US cities between 1956 and 1987, Glaeser et al. (1992) found that local competition and urban diversity contribute more to employment growth in those industries than regional specialisation, consistent with Jacobs's theory. Henderson, Kuncoro and Turner (1995), on the other hand, found that MAR externalities worked

for traditional industries, while both MAR and Jacobs externalities worked for new high-tech industries, by using a dataset with eight industries in 224 US cities between 1970 and 1987. Similar empirical studies have been conducted for many other developed countries such as France (Combes, 2000), Spain (Lucio, Herce, & Goicolea, 2002), Italy (Forni & Paba, 2002), and Japan (Dekle, 2002). Not surprisingly, conclusions in the market-oriented economies are in fact inconclusive, showing that specialisation plays a more important role in local growth than variety in some countries, and variety accounts for greater contribution for growth in others, though both are matters for growth in most countries (He & Pan, 2010). Studies that investigate relationships between dynamic externalities and industrial growth in China, however, are relatively scarce, more complicated, and conditional on unique policies[32], and institutional economic evolution[33].

While several studies have explored the effects of dynamic externalities on regional industrial growth in China during the economic transition period, the results are inconclusive. By studying a sample from seven coastal provinces from 1985 to 1989, Mody and Wang (1997) found a negative impact of specialisation and a positive effect of diversity and local competition on industrial growth, but the evidence of dynamic

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[32] The One-Child policy that was announced in 1979 restricted the natural population growth rate in China, but it caused unintended growth in children's educational investment (Tsui & Rich, 2002). Household registration system (Kukou) limits people's movement away from their origin to other cities or regions; however, university graduates are not limited by this system. They can study and work in cities or regions other than their origins (Congressoinal - Executive Commission on China, n.d.). Under the effects of those two polices, Ho and Li (2009) demonstrate that the major body of the enlarged city size tends to be educated and skilled migrations from the poor and under-developed cities or regions. They move from economic stagnating regions to rich and fast-developing regions to earn a higher wage. As a consequence, enlarged city size enhanced the effects of agglomeration and human capital spill-over and promoted further growth in earnings. Therefore, rather than having a linear causality relationship, city size and wage rates are more likely to positively enhance each other. Since this virtuous circle leads to the rise of the skilled city, wage rates, and migrations from economically stagnant to prosperous regions, one could expect that it widens the human capital gap between regions, creates structural imbalance between regional economies, impedes sustainable economic development, and deteriorates the intra-regional income inequality in China.

[33] China has experienced several distinct policy regimes since the beginning of the Communist regime in 1949. Before the economic transition, China had two distinct policy regimes. From 1949 to the early 1960s, under the effects of the Soviet experience and because of military security concerns, China had adopted a central planning system for resource allocation, and 'self-sufficiency' was the principle policy of regional economic development. Since the early 1960s, the worsening relationship with the Soviet Union and the growing military presence of the US in Vietnam enhanced China's regional economic self-sufficiency policy and caused the development of heavy industry to become the core of Chinese industrialisation, because they were seen as keys to China's protracted defence at the time (Batisse, 2002). In the late 1970s, China launched its economic reform, starting to transfer from central planning to a market-orientated economy. Previous self-sufficiency policy was no longer emphasised, instead, many polices were applied to accelerate marketisation, globalisation, and decentralisation (see section 2 and 6 for more discussion on this topic).

externalities is weak. This result is consistent with findings by Batisse (2002) and Gao (2004). On the other hand, He and Pan (2010) argue that the effect of dynamic externalities and the importance of MAR on industrial growth are stronger than Mody and Wang. Batisse and Gao claimed, because "marketisation and globalisation allow dynamic externalities to play a more significant role in sectors and regions which are largely liberalised and globalised, while decentralisation may discourage the importance of MAR externalities and magnify the roles of Porter externalities and Jacobs externalities" (He & Pan, 2010, p. 127). Using a dataset on manufacturing industries during the period of 2000-2005, He and Pan find that specialisation and local competition have significant positive effects on local growth, but those effects may reverse once specialisation and local competition exceed a certain level. With respect to diversity, it may contribute to industrial growth, but only when it reaches a certain level. Moreover, they argue that the impact of dynamic externalities became larger during the reform period, because the economic transition created conditions for a greater role of dynamic externalities in industrial growth.

In addition to local industrial growth, dynamic externalities also have an impact on other areas such as regional innovation. Investigating a dataset on the electro communication manufacture industry from 2002 to 2005, Xin Zhang (2007) finds strong evidence for positive MAR and a negative diversity and local competition effect on regional innovation by setting a national or Central Urban Area[34] as the sample base. Conversely, there is strong evidence for a positive Jacobs and Porter effect and a negative impact of specialisation on regional innovation if the provinces' level data (excluding Tibet and the Central Urban Area) were set as the sample base. As Zhang noted, this difference may be caused by distinct degrees of marketisation, industry structure, degree of industry agglomeration, and so on, consistent with findings by He and Pan (2010): the effect of dynamic externalities on industry is impacted by macro economic conditions such as marketisation and globalisation.

Since 1967, the relationship between income inequality and city size has received particular attention from economists. The relationship can be rationalised by the fact that both city size and inequality are related to the level of income. By using American

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[34] The Central Urban Area includes three municipalities that are directly under central government: Beijing, Shanghai, Tianjin; the four east-coast provinces: Shandong, Jiangsu, Zhejiang, Guangdong; and one inner province: Hebei (Beijing geographically is located inside the Hebei province).

state data, Aigner and Heins (1967), Conlisk (1967), and Al-Samarrie and Miller (1967) have found a negative relationship between the level of income and wage inequality. Since city size is associated with the level of income, it is expected that wage inequality increases with city size. Later studies have proved this hypothesis by discussing the direct effects of city size on income inequality. By controlling for other factors that may influence income divergence, Richardson (1973) and Long, Rasmussen, and Haworth (1977) found a positive relationship between income inequality and city size. A more recent study has indentified the strength of this relationship, in which city size specific factors account for 25 to 35 percent of the overall increase in wage inequality, and this effect (independent of observed skill) is unequal in terms of wage distribution, the relationship being at least 50 percent stronger in the lower half of the wage distribution than the upper half (Baum-Snow & Pavan, 2010). Unequal increases in wage dispersion between larger and smaller cities are the most crucial factor that drives the relationship between income divergence and city size. The wage disparity is mostly attributed to the greater growth in within group inequality in larger cities (Autor, Katz, & Kearney, 2008; Baum-Snow & Pavan, 2010). For example, although observed and unobserved skills are similar across cities of different size, skill premiums are higher in larger agglomerations than in smaller agglomerations and rural areas (Bacold, Blum, & Strange, 2009). Since industries with greater growth in the variance of wages within skill groups are always disproportionately located in larger cities (such as computer-intensive industries) (Autor, Katz, & Krueger, 1998), larger cities are more likely to generate a greater rise in wage inequality over smaller ones.

2.6: Industry and Occupation

Around the world, the segregation of women into low-paying occupations is regarded as the most direct source of the gender earnings gap (England, 1992; Marini & Fan, 1997; Y. Zhang, et al., 2008). This institutional perspective emphasises the effect of a gendered labour market, pointing to differing reward structures for male- and female-type jobs. According to Huffman and Velasco (1997), Liu, Meng and Zhang (2000), England (1992), and Yoder (1991), average earnings are lower in female-dominated sectors and industries, and both men and women are paid less in predominantly female sectors and industries. Although there is variation, occupations that men and women dominate are quite similar across affluent nations (Charles & Grusky, 2004). In addition to the unequal distribution of men and women among occupations, within-occupation gender disparity in the job hierarchical level is another substantial factor that contributes to the gender earnings differential. Many empirical studies found that women face a glass ceiling or a group of barriers that obstruct their movement to the upper hierarchy within occupations (Doeringer & Piore, 1985; Shu, 2005; Winter-Ebmer & Sweimuller, 1992).

Occupational segregation by sex is the tendency for men and women to be in different occupations. In Anker's (2001, p. 129) words: "It is extensive in every region, at all economic development levels, under all political systems, and in diverse religious, social and cultural environments. It is one of the most important and enduring aspects of labour markets around the world". Inequity in occupational segregation is wasteful of human resources, increases labour market inflexibility and reduces an economy's ability to adjust to change (Anker, 2001). As discussed above, the average wage level is lower in female dominated sectors than male dominated and gender neutral occupations; and male and female workers are disproportionally allocated to higher and lower hierarchical levels within occupations, respectively. In other words, occupational segregation is detrimental to women but beneficial to men, at least in terms of earnings. However, why are the occupations with a high percentage of female workers expected to have a lower pay? There are two economic explanations for this phenomenon. First, as Adam Smith already indicated (1776), occupational taste partly contributes to people's occupational choice, and taste is often influenced by subjective and non-pecuniary factors. To the extent that occupational tastes are common to particular social groups or gender, they have influence on the supply of labour in the

occupation, and therefore on the determination of wages. Smith's argument is consistent with Barbara Bergmann's (1974) "Overcrowding Model" which demonstrates a differential pay between male and female employees. Ignoring the causes of occupational segregation, all else being equal, overcrowding indicates that the gender pay gap is primarily caused by the oversupply of women in a sector due to their preferences for this kind of work and lack of opportunities for females in the male dominated sector and, hence the earnings in the predominately female occupations are lower than in the male, the oversupply of women forcing down the pay level of the female sector (Bergmann, 1974).

The other economic explanation for the lower pay in female jobs is based on the theory of compensating differentials: by taking both pecuniary and non-pecuniary benefits into account, competition eventually ensures that all jobs are of equal value to workers (Smith, 1776). As I discussed earlier (see "Family Circumstance section), due to biological, cultural, and social reasons, women are more likely than men to trade off earnings for non-pecuniary benefits, such as having mother-friendly working conditions. Since the sum of pecuniary and non-pecuniary benefits is equal for all jobs, greater non-pecuniary benefits hence lowered the wage level of female occupations. Men may not necessarily remain with the male dominated sector. Some may work in female dominated occupations, either because of a strong preference and/or particular skills for the type of work, or simply because they are unable to enter the male sector. Regardless of the reasons for this phenomenon, men who work in the female sector are assumed to receive lower wages than those in the male dominated sector.

While the claim that gender segregation in occupation causes wage differentials between equally productive men and women is uncontroversial, the exact causes of occupational segregation remain unclear. Since previous empirical studies have proved that occupational segregation and segregation within occupation are two major sources of the gender earnings gap in China, it is imperative to identify the reasons for world-wide occupational segregation and segregation within occupations. Perhaps the initial and best explanation for the pattern of occupational segregation in the labour market was given by Adam Smith over 200 years ago, where he linked workers' occupational choice and firms' hiring decisions with three labour market forces: market, institutional, and sociological ones (Smith, 1776). Smith's discussion is

widely accepted and has been further developed by economists and social scientists. Smith's three forces have been developed into three separate theories to explain the existence of occupational sex segregation, they are: human capital theories (neo-classical); institutional and labour market segmentation theories; and feminist or gender theories (Anker, 2001).

The occupational dissimilarity index, which, roughly speaking, captures the degree of occupational segregation, tells us what percent of either men and women would have to change occupations to render all occupations integrated with the same percent of male and female workers as the workforce as a whole. The smaller the index, the lower is the occupational sex segregation. Study on the occupational dissimilarity index in the Chinese labour market remains absent, and research on this topic, therefore, is recommended. Unfortunately, due to limitation of resources, this thesis is unable to provide this index to discuss trends in occupational sex segregation in China.

The discontinuous pattern of labour force attachment of female employees is one of the primary explanations for occupational segregation. Household work and childrearing, which have significant negative effects on market hours, remain the primary responsibility of women (Blau, et al., 2006; England, 1993; Kaufman & Hotchkiss, 2003), thereby, as the human capital model suggests, given the traditional division of labour in the family, a woman is anticipated to have a shorter, and to have more frequent and longer interruptions in her working life. These characteristics of female workers influence their choices of occupation, and also affect company employment decisions.

The discontinuous nature of females in labour force participation diminishes their returns of human capital. As a consequence, and when compared to men, women have fewer propensities to pursue college and graduate study, which causes a lower average educational achievement for women; they are less likely to invest in specific types of education; and have a greater probability to avoid jobs that emphasise specific training (Blau, et al., 2006; Kaufman & Hotchkiss, 2003). Women, therefore, have an economic incentive to purposely choose occupations that require less education and training, have no firm-specific training, and where the penalties on discontinuous labour force attachment are smallest (Polachek, 1981).

Polachek (1981) has pointed out that these occupations have at least three common characteristics: shorter training ladders, skills and training are primarily general in nature and skills and training would not become obsolete. Such occupations are very likely to be those in which women are disproportionately employed, such as nurse and schoolteacher. However, there is considerable controversy on Polachek's theory. Some of the most recent evidence supporting it can be found in studies by Richard Easterlin (1995) and David Macpherson and Barry Hirsch (1995), which conclude that men and women choose those occupations based on their skills and preferences. Other researchers, however, have questioned the importance of career interruptions as a source of occupational segregation, because there is no reason for women to rush into low paid female occupations since some male occupations require only little skill, experience, or training (Lapidus, 1993), and women who had job interruptions are no more likely than women who have continuous work histories to be employed in female occupations (Blau & Ferber, 1991; Okamoto & England, 1999).

Moreover, Polachek's theory implies that men and women with the same amount of education also choose different fields, because women choose female occupations that optimise their lifetime earnings. Since women are expected to have more job interruptions than men, they prefer to choose jobs that have low depreciation of human capital to minimise wage 'drooping' that occurs during the years that they are away from the job (Polachek, 1981). Nonetheless, other studies that use more detailed occupational categories have not found a higher wage drop rate in traditionally male jobs (England, 1982, 1984). According to another argument, jobs offering more on-the-job training will, ceteris paribus, have lower starting wages but higher wage appreciation with seniority. Women, thus, would choose jobs with higher starting wages but with lower wage appreciation to maximise lifetime earnings because more frequent job interruptions cause women to have less seniority than men (England, 2005). However, research finds that the starting wages in female dominated occupations are lower than male dominated occupations (England, Reid, & Kilbourne, 1996). In addition, a recent study indicates that women are more likely than men to participate in on-the-job training, which questions the argument that more frequent job interruptions leads women not to invest in future earning power (Simpson & Stroh, 2002).

From the demand side, given the characteristics of female workers in the labour market, firms are reluctant to hire women for jobs that require heavy investment in specific training (Blau, et al., 2006; Kaufman & Hotchkiss, 2003). Employers have a strong economic motivation to employ men in such jobs as they are supposed to be more stable and remain with the firm for a longer time than women (Kaufman & Hotchkiss, 2003). It is important to bear in mind that women's choice of occupation and firms' employment decisions create a vicious circle: firms prefer to provide women with only basic general training due to their discontinuous nature in the labour market; since women have only the basic general training, they have a greater propensity than men to quit or switch jobs (more training, especially firm-specific training would raise the cost of job switch, hence, the cost of job switch is much smaller for women than men as women had less training), confirming the employer's original belief.

Differences between men and women in fields of specialisation are another key factor in explaining gender differences in earnings. To the extent that women are less likely than men to obtain more education, their earnings are expected to be less than men's. However, as we discussed earlier, men and women with the same education level often still choose different fields of specialisation. In addition to the productivity related explanations provided above, the gender role, a more sociological issue is another major reason of occupational segregation. Sociological controversies on the origins of gender roles and gender occupation can be classified into two categories. From one point of view, the innate biological difference between men and women decides gender roles by defining occupations as 'male' and 'female'. 'Male' occupations require "masculine attributes of aggressive, competitive behaviour, or large amounts of physical strength and endurance" (Kaufman & Hotchkiss, 2003, p. 429), like lawyer, miner, and constructor. On the other hand, "female" occupations require "patience, caring, and empathy that women allegedly possess relatively more of" (Kaufman & Hotchkiss, 2003, p. 429). Such occupations include nurse, schoolteacher, receptionist, etc. Another point of view, however, argues that gender roles were influenced and defined by socialisation. In this theory, men and women were taught and implanted with the concept of 'male' and 'female' work by parents, teachers, and society, since the very early ages of their life and choose different courses of study in school (England, 2005; Marini & Fan, 1997). An empirical study

found that teaching in the early ages of children is substantially important, girls and boys as young as four years old already showing a notion of gender-stereotyped occupations and preferences for occupations that are traditionally associated with their own gender (Trice & Rush, 1995). Hence, with different preferences, men and women invest disproportionally in fields of study with heavily reinforced gendered occupations (see 'Human Capital' section). Although many more women today are intending to pursue male occupations and social attitudes toward gendered occupation have experienced a revolution in the past 20 years, traditional gender role stereotypes continue to contribute very heavily to occupational choices of male and female employees (England, 2005; Farrington, 1995; Helwig, 1998).

Another leading explanation of occupational segregation, however, focusing on the demand side, is that employers view male and female employees differently, consciously preferring men for male jobs and women for female jobs. In detail, there are two main motivations for employers to engage men and women in different occupations. The first, as England (2005, p. 272) pointed out: "employers are in the grip of arbitrary, socially constructed notions of what sex is appropriate for what job – owing to the same socialisation or gender enactment that makes employees' aspirations gendered". For instance, employers of mineworkers believe that men fit mining work better than women, and employers prefer women for child care and nursing work because they believe that women know how to care for children and patients much better than men. Discrimination, the second motivation, is often de-emphasised by economists since neoclassical theory indicates that it should be offset by competition in the labour market. However, there are at least two types of discrimination that economists do think could have explanatory power: "taste" discrimination and statistical discrimination. Economists define discrimination in terms of how the firms/employers treat two people of equal productivity differently because of non-productivity characteristics such as gender and race (Kaufman & Hotchkiss, 2003). Given the discrimination, for profit maximisation and risk minimisation purposes, firms provide narrower hiring opportunities, lower hierarchical level jobs, less on-the-job training (especially specific training), and fewer internal labour markets for particular groups of peoples, such as female workers (Winter-Ebmer & Sweimuller, 1992). This reinforces women's preference for those female-stereotyped jobs with no or relatively lowers discrimination against them. The

discrimination against women is caused by a variety of factors such as gender roles, the nature of female labour force attachment, educational attainment, fields of study, inability of the employer in productivity discernment, etc. (Blau, et al., 2006).

As we mentioned earlier, the dual labour market theory demonstrates that jobs in the labour market can be segmented into two sectors; primary and secondary. The primary sector emphasises high levels of specific skills, provides higher returns to additional training and years of experience; more internal labour market promotions; more on-the-job training opportunities (especially for firm-specific training); greater established job ladders; more stable employment relationships; and better working conditions. For the secondary sector, the opposite characteristics apply (Dickens & Lang, 1985; Doeringer & Piore, 1985). Given the properties of the primary labour market, firms screen very carefully such personal traits as employment reliability, company loyalty, working attitude, learning ability, cooperation capability and discipline to hire the 'right' employee (Blau, et al., 2006; Kaufman & Hotchkiss, 2003), because firms will lose their investment in the employee if they selected the 'wrong' person. Men, thus, are more likely to be employed in primary jobs and women in secondary jobs based on their personal traits. For example, since the economic returns to employer's investment in a worker's specific training will be erased if the worker quits, male employees are preferred in firm-specific training because of men's relatively higher employment stability and reliability.

It is worth emphasising that by taking both pecuniary and non-pecuniary benefits into account, competition eventually secures that all jobs have equal value to workers (Smith, 1776), thereby, women who are willing to work in the secondary sector are those who prefer to trade off higher wages and steeper lifetime earnings profiles for more favourable working conditions and lower penalties for discontinuous labour force participation. For example, a mother may prefer a flexible part time job that is easily interrupted from work to take care of her young child. Whenever women are forced to or willing to work in the secondary sector, a vicious circle enhancing the disproportional allocation of female employees in the secondary sector is created. Given the characteristics of the secondary sector, lower wages and dead-end secondary jobs diminish female's incentives to work, may cause them to engage in frequent job changing, job interruptions, tardiness, and so on, confirming employers' prejudice and discrimination against female workers and the cultural notions of

differences between men and women in personal ability, preferences, social roles, and economic roles, and further negatively affecting the opportunities and outcomes of women in the primary labour market (Blau, et al., 2006).

Moreover, unequal access to on-the-job training, especially firm-specific training, between the primary and secondary sector further enlarge both productivity and pay differences between male and female workers, the extended productivity differences further limiting the mobility of female workers to the primary sector (Kaufman & Hotchkiss, 2003). Therefore, male workers are preferred by employers over equally qualified female workers in the primary sector, and women are trapped in the secondary sector. It is important to bear in mind that primary and secondary jobs may exist within a firm, shown as men and women working at different hierarchy levels within occupations (Doeringer & Piore, 1985). It is an additional reason for expecting women to be more concentrated in the competitive sector. However, one may ask whether between- or within-sector differences account for more gender wage differentials? This issue is discussed in greater detail later.

Regarding the occupational sex segregation issue in China, since the launch of economic transformation in late 1970s, this thesis prefers to separate the discussion into two periods; the 'pre-reform' and the 'reforming' phases. Before the reforms, labour was one of the resources controlled by the Government. Workers were arranged and sent to a 'matching' job by the state personnel offices at various levels (Naughton, 1996), and almost all the workers remained in the same firm for the rest of their working lives (Ding, et al., 2009; J. Liu, 2007). Under this system, women consistently received less advantageous placements due to biological, cultural (traditional Confucianism), and social reasons (Ding, et al., 2009). Their disadvantages in educational attachment and other productivity related factors also played a major role in the unequal occupational placement (Bian & Logan, 1996a, 1996b). Furthermore, women were heavily concentrated in the collective sector, which offered significantly lower wages than the state sector which was dominated by men. The disproportionate placement of male and female employees in the collective and state sector and women's lower hierarchical level within the sector, were the two significant sources of the gender gap in earnings in pre-reform China (Shu, 2005). On the other hand, "equal pay for equal work" was an important policy in socialist China (at least in pre-reform China). Under this policy, Chinese women earned more than 80

percent of men's pay, and this gender gap in wages was remarkably small compared to international standards during the same period (Ding, et al., 2009; Gustafsson & Li, 2000). This Government-controlled lifetime employment was ended in 1986 when the "employee contract system" was introduced (Tan, 1994). However, it is important to point out that this labour contract system only requires state owned enterprises to put new employees on fixed-term (and renewable) contracts; existing lifetime employees were not requested to switch to fixed-term contracts until 1994 (Ding, et al., 2009; C. K. Lee, 2005).

The 1978 economic reforms brought several changes to the Chinese labour force. First, increasing market competition within and outside the state sector caused rising wage levels in the new sectors, such as the private sector, the semiprivate sector, and the foreign joint sector and also caused more differentiated wage levels within the state sector. Second, wage inequalities became increasingly associated with industry and occupation because both industrial structure and industrial ownership changed substantially during the reform, and those changes had significant effects on gender wage disparities. Third, jobs were no longer arranged and distributed by the state and the individual workers were now able to select jobs based on their preferences. Finally, since a large number of state enterprises were merged, privatised, and bankrupted, unemployment rose drastically, pushing workers to seek jobs in the emerging labour market (Shu, 2005; Shu & Bian, 2003). Since the economic reforms raised wage levels in the new sectors and enabled more self-selection of workers among the ownerships sectors, the impacts of the economic reform on the overall gender wage differential across economic sector have become apparent. Before reform, the Chinese Government did not allow much income inequality, and wage dispersion due to human capital characteristics was suppressed. Marketisation and privatisation of the economy brought by the reforms allowed for larger wage gaps with human capital characteristics being rewarded appropriately by the market mechanism (W. Liu, et al., 2000). The diminishing advantage of the state and collective sectors over the new sector caused those workers with more human capital to transfer to the new sector which is more privatised and marketised to make higher earnings. Females, hence, are able to make inroads into the state sector (from the collective sector). This hypothesis has been confirmed by previous studies (Shu, 2005; Shu & Bian, 2003).

Although China started its economic reform in 1978, the central planning system still played a primary role in the Chinese economy until 1992. In the moderate reform phase (1978 to early 1990s), the share of state-owned enterprise (SOEs) in gross industrial output dropped very slowly; more than half of gross industrial output was persistently contributed by SOEs. After Deng Xiaoping's famous southern tour in 1992, the Chinese Government formally endorsed the full-fledged march towards a socialist market economy (Dong, et al., 2007). As a consequence, the share of SOEs in industrial output fell at a much greater rate, from 48.1% in 1992 to 13% in 2003 (B. Fleisher, et al., 2010). The share of employment between state and non-state sectors in China experienced similar changes to that of industrial output. Before economic reform, more than three quarters of urban employment was in the state sector, less than one percent in the new sector, and the rest was in the collective sector. By 1999, the urban employment structure had changed significantly: more than half of urban employment was in the new sector, less than 41 percent worked in the state sector, and less than nine percent in the collective sector (China's National Bureau of Statistics, 2000). More importantly, the effects of industrial ownership on the gender wage gap changed substantially during the reform phase, and these changes varied by gender: female workers experienced much greater income changes across sectors than did male. In accordance with Shu and Bian's study (2003), in 1988, males in the new sector earned 6% and 13% more than those in the state and collective sectors, respectively. Women, on the other hand, earned 22% and 7% more in the state and collective sectors, compared with those in the new sector. In 1995, earnings in the new sector surpassed the state sector by 21% for men and 34% for women and surpassed the collective sector by 41% for men and 53% for women. Those findings are consistent with the analyses of the datasets from 1990 and 1995 which argue those in the state and collective sectors experienced a relative decrease in earnings between 1990 and 1995, compared with those employees in the new sector (including private sector and foreign joint sector) and changes were larger for women than for men (Shu, 2005).

Conclusions on whether the gender wage gap was widened or narrowed during the reform period are inconclusive. On the one hand, Shu and Bian (2003) and Shu (2005) argue that the significance of sector-based segregation in accounting for the gender gap in earnings is likely to decline with marketisation due to the declining gender gap

in affiliation with the state sector. However, it failed to take account of other aspects of marketisation, such as the expanding of the wage gap if human capital characteristics are rewarded appropriately (W. Liu, et al., 2000), which is very likely to happen in the more marketised sector. Moreover, disproportionate allocation of male and female in the state and non-state sector may also raise gender wage inequality, since income in the new sector tends to exceed that of both state and collective sectors. Hence, on the other hand, as Owen and Yu (2007) claimed, since the institutional bias of SOEs and urban collective enterprise (UCs) are equal wages for all, the average wage in the state sector is lower than in the non-state sector; and human capital characteristics are better rewarded by the more market-oriented non-state sector, declined shares of SOEs and UCs in industrial output and employment shifting demand from favouring workers in the industry with lower wages to higher wages (Owen & Yu, 2007), which leads to a higher level of average wage and income disparity. This analysis is consistent with the discussion by Xu and Zou (2000), that the share of SOEs in the labour market negatively associates with gender income inequality.

Occupational segregation and sex segregation within an occupation are both found in the Chinese labour market. In accordance with Shu and Bian's (2002, 2003) studies on the Chinese labour market in 1988 and 1995, Chinese women were less likely to be office-holders and managers in state agencies and enterprises, to work in the mining, construction, and transportation industry, or to work in Party and Government agencies; and they have a greater propensity to work in the service and education sectors. During this period, the number of workers [35] and male office clerks experienced a decline, and an increasing number of male cadres, managers, and female office clerks were employed. The proportion of people in top paying occupations that include office-holders and managers of state organisations and professional and technical workers has increased. Since professionals, managers, white-collar, and other higher level employment generate a very wide range of earnings and only a limited number of individuals with the highest earnings, the percentage of the work force in such higher positions, therefore, is positively

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[35]Shu and Bian identified five occupational categories: owners and operators of private businesses, professional and technical workers, cadres and managers of government agencies and state firms, office clerks, and skilled and unskilled workers

associated with income inequality (Long, et al., 1977). Between 1988 and 1995, an increasing number of people were employed in the top paying occupations which were primarily generated by emerging non-state enterprises. Since there the primary aim is profit maximisation and female workers on average are less profitable than male workers, the increase in those top paying occupations is larger for men than for women, further widening the gender earnings gap in the occupational sector. It is worth emphasising that along with economic reform, the income return to each occupation changes over time. In 1988, owners and operators of private businesses enjoyed the highest earnings, while workers and office workers had the lowest. By 1995, income return to owners and operators of private businesses had declined substantially to the lowest income group in China (Shu & Bian, 2003).

In addition, Shu (2005) has identified changes in earnings and sex composition by industrial sector and ownership. Between 1990 and 1995, ten out of the twelve industries that have experienced the most relative declines in earnings are in the same five industries: trading; manufacturing; construction; mining; and public health. Seven of these twelve have an increase in the proportion of women employees, while four remain virtually unchanged. Furthermore, seven come from the collective sector, compared with three in the state sector and two in the new sector. On the other hand, ten out of the eleven industries that have experienced the largest relative increase in earnings are in the four industries of real estate and social services; finance and insurance; transportation; and scientific research and development. Among these eleven industrial sectors, four have reduced proportion of women employees, three remain unchanged in sex composition, and the remaining four experienced an increase in the percentage of women. Similarly, among these eleven industries, about the same number come from each economic sector, yet, the top three industries that have experienced the greatest increase in earnings belong to the new sector. Overall, compared to new and state sectors, the collective sector experienced a relative decrease in earnings between 1990 and 1995, but changes in earning within the sector vary among industries. Furthermore, industries that have high rates of female workers are penalised in earnings, and an increase in the percentage of female workers employed in an industrial sector will cause earnings decline. This decline even persists after controlling for a series of individual characteristics and geographic locations. These findings confirmed the previous argument that the proportion of female workers

in an occupation has negative effects on its average earnings. On the other hand, these findings revealed that the proportion of female workers in occupations is not the sole determinant of the wage inequality, industry sector and ownership also having significant effects on the earnings gap. Since China is still in the process of economic reform, industry sector and ownership may experience substantial changes in the future, and it is valuable to include those factors in our models.

Regarding the industry sector, Huang, Kou and Kao (2003) indentified that the secondary industries accounted for half of the inequality in regional economic development throughout the 1990s, which fluctuated between 48.2 and 51.3 percent. By contrast, the tertiary industries contributed only 26 to 38 percent during the same period. Manufacturing, as the primary component of the secondary industry, on one hand, is supposed to be negatively associated with income inequality, because it is " likely to provide a fairly narrow range of relatively high earnings for individuals with a modest level of education" (Long, et al., 1977, p. 244). On the other hand, it is expected to be positively associated with wage rates since it has higher probability than the service sector to serve and compete in the national market, increasing the efficiency of manufacturing firms and freeing them from purely local demand conditions (Soroka, 1983). However, the conclusion by Soroka is based on developed economies which are much more capital intensive than the Chinese economy. By the end of the 1990s, manufacturing industries in China, especially those export-oriented ones located mostly in south-east-coast regions are heavily concentrated in a labour intensive system (J. Wang, 2001). Most jobs in such industries are regarded as secondary jobs, and workers are paid at lower rates than average (Jici Wang & Mei, 2009). I thus, question the reliability of Soroka's conclusion, in particular with regard to the Chinese economy. Since productivity and wage rates are expected to be higher in larger cities and more developed regions, wage rates in manufacturing are likely to be correspondingly higher. However, within a city or region in China, the percentage of employment in manufacturing tends to be negatively associated with the average income. Therefore, one could expect that the higher the percentage of manufacturing in total employment (independent of all other factors), the lower the income inequality and the overall wage rates.

As discussed, the economic growth rate is a major determinant of income inequality. There is, however, controversy on whether within-sector or between-sector

differences attributed more to wage inequality during the rapid economic reform period. According to Wang and Cai (2008), the main source of gender wage disparity lies in unequal pay within a sector, earnings gap caused by differences among sectors being relatively small. This conclusion is consistent with the findings of Park, Song, Zhang and Zhao (2003; 2008). On the other hand, Park et al. found that wage differences between high-skill sectors, such as education, finance, and government, and low-skill sectors, such as manufacturing and retail trade, widened during the rapid reform phase and the (between sectors) wage gap is much larger than that within high and low-skill sectors. I thus, hypothesise that for sectors with significant wage differences, between-sector difference is the primary source of earnings inequality; for sectors with similar wages, within-sector inequality plays the primary role. Whether within- or between-sector attributes more to wage inequality may vary across different datasets and time periods. Earlier discussions (in the "Region and City Size" section) indentified that increasing skill premiums are the primary source of both raising within- and between-sector wage inequality. However, they are not the sole determinant. By controlling skill levels, 19 to 32 percent of the city size effects on wage inequality are still attributable to differences in the industrial composition (Baum-Snow & Pavan, 2010).

As early as 1967, Fuchs (1967) has found that in addition to occupation, gender, human capital, social and political capital, and so on, industrial mix is another important determinant of gender / regional / total income inequality. However, region and city size are also expected to have different effects on gender and occupational wages. These effects are attributed to three factors: wages rise unequally among occupations as the city size increases. Whether the raised productivity in a larger city is the result of higher capital-labour ratios or agglomeration advantages needs to be identified carefully, because these affect occupations differently (Segal, 1976; Sveikauskas, 1975); a city's or region's growth rate is positively associated with wage rates because of a lagged response on the part of the labour supply. Mothers with young children are often tied with family and children responsibilities and unable to respond quickly to changes of demand in the labour market, referred to as the "captive worker" (Soroka, 1983). By including all of these factors in his study, Soroka (1983) found that the growth of a region or city economic or in size, has greater influence on the wages of female than male workers, and office over maintenance workers.

Mobility is the primary cause of these differences, as females are likely to be less mobile than male workers and office work is more likely to suffer lagged shortage in labour supply.

2.7: Discrimination

Since China is changing, indeed has transitioned from a centrally-planned economy to a market-oriented economy, skills specification in its labour market has become more important than before. It raises concern on women's status in the urban workplace, a concern characterised as a discrimination story, because discrimination in the labour market is believed to be more prevalent in specific skills economies (Iversen, et al., 2005). A number of empirical studies have investigated wage discrimination against women in China based on forms of ownership, degree of marketisation, occupation segregation, and so on (Bian & Logan, 1996a; Cai, et al., 2005; Shu, 2005; Shu & Bian, 2003; Shu, et al., 2007; M. Wang & Cai, 2008; Y. Zhang, et al., 2008). Findings indicate that the existing gender earnings gap in urban China arises from both personal capital difference (such as human capital, social capital, and political capital) and discrimination. This section identifies the concept and components of discrimination, examines how market discrimination can produce gender inequalities in the labour market and why these disparities have persisted over time. Although empirical studies have developed a number of models to analyse the effects of discrimination on gender wages, they did not establish which of these approaches most accurately describes the labour market (Blau, et al., 2006). This thesis, therefore, only estimates the residual amount of the gender earnings gap unaccounted for by gender differences in human capital, family circumstances, social and political capital, ownership sector, occupation, industry, and region, as probable discrimination.

Discrimination means individuals or groups of individuals being treated unequally and unfairly (Kaufman & Hotchkiss, 2003). In the labour market, it is defined as treating equally productive workers differently (England, 2005). Discrimination affects economic outcomes at two separate points: premarket and market. Premarket discrimination means that those individuals (or groups of individuals) who are discriminated against cannot receive equal opportunities to develop their natural abilities and talents in pre-employment years. For instance, daughters often have

fewer opportunities than sons to be sent to college by their parents in non-single children families, rural areas, and pre-reform China (see "Human Capital" section). At this stage, discrimination caused unequal opportunities among individuals (or groups) in accumulation of income-generation characteristics, such as education and health, and hence, affected the future economic reward of the individuals (Kaufman & Hotchkiss, 2003). Market discrimination happens when "people of equal capabilities who are competing in the labour market are given unequal job assignments, promotions, or rates of pay solely on the basis of some characteristic unrelated to their performance" (Kaufman & Hotchkiss, 2003, p. 457).

Market discrimination includes a number of sources, the most common and important being personal prejudice, market power, and statistical discrimination. Personal prejudice denotes a feeling of dislike for or against associating with particular individuals or groups. The implications of personal prejudice in the labour market were laid by Becker (1971), who named it "taste" discrimination. In this model, Becker demonstrates that such taste discrimination could stem from three sources within the labour market: employers, co-workers, and customers. For example, a person with the same level of productivity as other employees may suffer discrimination simply because employers find it distasteful to employ/work with them, or sometimes dissatisfaction comes from their co-workers or customers. The second source of market discrimination is caused by the exercise of market power. This could either be created by monopolistic firms (demand side) or labour unions (supply side) because they have the power to set wages independent of competitive forces. It is important to point out that the motivation of this discrimination, however, is not prejudice, but pecuniary gain. Wage discrimination between genders that arises from market power could add to the incomes of the discriminators (Kaufman & Hotchkiss, 2003). As Kaufman and Hotchkiss (2003, p. 466) argued: "the long-term persistence of discrimination is readily explained by the fact that some members of the majority groups make money from it".

The third and maybe the most important source of market discrimination is statistical discrimination. This theory was first developed by Phelps (1972) and further studied by Dennis & Glen (1977). The motivation for statistical discrimination is similar to that of market power discrimination, which is not prejudice but is related to money. However, while statistical discrimination is a passive discrimination, market power

discrimination is an active discrimination. Statistical discrimination does not set a disparate wage to pursue pecuniary gain, but to achieve profit maximisation under the imperfect information that confronts employers in the screening process. In the model of statistical discrimination, employers can never know for certain an employee's actual productivity and reliability. Since hiring the 'wrong' person is very costly, it is not surprising that employers study the qualifications of applicants very carefully based on personal characteristics/traits, such as educational attainment and work experiences. Employers know that individual-level cheap screening devices in the hiring assessment are not accurate, but it is sometimes too expensive to afford more accurate individual-level assessments. Therefore, employers may use group characteristics, such as gender and race, to make predictions. This can lead to statistical discrimination. If employers believe that women are less reliable in jobs than men, statistical discrimination against women will take place. That is, a male and female worker with equal productivity be paid differently, promoted unequally, or be provided with disparate hiring opportunities because employers judge individual women on the basis of their beliefs about group averages (Blau, et al., 2006; England, 2005; Kaufman & Hotchkiss, 2003).

Two conditions have to be met for statistical discrimination to occur. The first is that the reliability of the predictors of individual productivity and firm loyalty must be different among groups (Kaufman & Hotchkiss, 2003). For example, previous analysis discussed in this thesis found that women's average educational attainment is lower than men's in China, and men's rate of absenteeism is higher than that of women. The second condition means employers will select those whose productivity is least uncertain among equal credential candidates to minimise the risk of imperfect information and to pursue profit maximisation (Orszag & Zoega, 1996). As a result of their lesser score on some harder to measure attributes that correlate to individual productivity and firm loyalty female workers suffer statistical discrimination in the hiring process and during the work. This phenomenon, as David (1996) stated, causes a vicious circle against female workers. Since women are discriminated against during the hiring process, fewer are hired by employers, enhancing employers' uncertainty on the actual performance of female workers.

As noted above, labour market discrimination adversely affects women's own decisions and behaviour. This is often referred to as 'feedback effects'. More

importantly, the consequences of discrimination are especially pernicious when accompanied by feedback effects, and the reinforcement between discrimination and these often become a vicious circle against women (K. Arrow, 1973). How does this work? Basically, discrimination against women leads employers to arrange them in relatively disadvantaged positions compared to men to minimise risks and pursue profit maximisation. Since disadvantaged positions (say secondary jobs) provide fewer incentives to work hard and stay on the job, women exhibit changes in supply-side behaviours, such as higher turnover rate, frequent job interruptions, and lower productivities, confirming employers' perceptions that female workers are less stable and productive, and therefore giving them no reason to change their discriminatory behaviour. On the opposite side, as discussed earlier, women will be stable and productive workers if they are hired into positions that reward stability and productivity. The consequences of feedback effects indicate that a relatively small amount of initial labour market discrimination can result in greatly magnified effects, and, employer behaviour based on initial discrimination may "persist in the long run and be fairly impervious to competitive pressures" (K. Arrow, 1973; Blau, et al., 2006, p. 228; Kaufman & Hotchkiss, 2003).

What types of jobs statistically discriminate against women the most? One type is where men are more likely to have the skills than women with the same educational attainment, such as engineer and police officer. The other is those jobs that emphasise job attachment and on-the-job training. Since the view that women are, on average, more likely to quit or interrupt their jobs tends to be widely accepted by employers, men are favoured in those jobs (Kaufman & Hotchkiss, 2003). Many empirical studies have proved employers' views that women are more likely to quit or interrupt work than men (Royalty, 1998; Sicherman, 1996). These findings indicate that if provided with similar incentives to remain, women will quit jobs as often as male workers. Such incentives, as I discussed earlier, include wages, promotions, working conditions, and so on. This phenomenon, again, confirms the vicious circle theory, in which secondary jobs and turnover rate reinforced each other. Polachek (1985) and England (2005) confirmed that the effects of statistical discrimination on the likelihood of women's career interruption is on the top of whatever sorts of discrimination women are subject to. On the other hand, they argued that the linkage between childrearing responsibilities and occupational segregation through statistical

discrimination is very weak, which questioned Royalty and Sicherman's findings. Moreover, the argument that women have higher turnover rates than men remains controversial. Some studies argue that although women may leave jobs or exit the labour force for family-related reasons, they are less likely than men to move to another company (England, 1992). Furthermore, some empirical studies on college-educated workers indicate that female workers' behaviour becomes more similar to their male counterparts, with only a small gender difference on turnover being identified (Keith & McWilliams, 1995; Light & Ureta, 1992).

Rather than on types of jobs, studies on the Chinese labour market concentrate more on the wage gaps between and within state and non-state sectors, because unlike western developed economies, SOEs dominated the labour market since the foundation of the People's Republic of China in 1949, and persisted until the late 1990s when the non-state-section overcame the state-section in percentage of employment (China's National Bureau of Statistics, 2000). Under the central-planning system in the pre-reform period, although women were heavily concentrated in the lower income collective sector and consistently received less advantageous placements in both state and collective sectors, they enjoyed lifetime secured employment, equal pay for equal work policy and a wide range of social benefits, such as maternity leave, childcare, and pensions. In this period, Chinese women earned more than 80 percent of men's pay, much higher than international standards at the time. However, the industry structure in China changed substantially during the economic reform. In the pre-reform phase, the labour market share of the new sector was less than one percent, and the figure increased dramatically since the economic transition, especially in the radical reform period. By 1999, more than 50 percent of employment is provided by the new sector, and the figure further increased to 66.6 percent by 2002. By contrast, 76.2 percent of urban employment was in the state sector in 1980, and the number declined to 40.8 by 1999 (China's National Bureau of Statistics, 2000, 2005a). Do the diminishing role of the SOEs and the increasing importance of the new sector have critical implications for gender inequalities in paid work?

Before moving into the discussing of the above question, we need to identify whether the pure wage discrimination against women exists in China or not. Although studies applied different methods and independent variables, pure wage discrimination

favouring males is identified throughout (Dong, Yang, Du, & Ding, 2006; Gustafsson & Li, 2000; Shu & Bian, 2003; M. Wang & Cai, 2008; Y. Zhang, et al., 2008). In particular, Wang and Cai (2008) argue that lower wages for women lies primarily in unequal pay within sectors; 94 percent of the total gender earnings difference is contributed by the intra-sector wage gap; and 86 percent of within-sector gender wage differentials cannot be explained by human capital, marital status, and health status. By contrast, the inter-sector gap accounts for only 6 percent of the difference of which 61 percent remains unexplained (independent of human capital, marital status, and health status). Overall, 84 percent of the total gender earnings differential remains unexplained. Based on Wang and Cai (2008), one could conclude that the pure wage discrimination is a serious problem in the Chinese labour market, and it is mainly attributable to inter-sector differentials. However, by controlling for more independent variables, such as social and political capital, industry sector, ownership, and occupational position, the degree of pure wage discrimination is expected to be much smaller than the one identified by Wang and Cai. This study will shed light on this issue by identifying residuals as the pure wage discrimination.

Most studies identified that gender discrimination grew during the economic reform period, especially in its radical transition phase. As already discussed (see my 'Economic Transformation and its Effects on the Labour Market in Urban China' section), the restructuring of SOE and privatisation shifted SOEs' emphasis from equity to efficiency, and abrogated the lifetime secured employment and the wide range of social benefits. By 1997, 61 percent of China's laid off population were women who accounted for only 39 percent of the work force (Rosenthal, 1998). This finding is consistent with the argument of Lee (2005): Work is more onerous, less fair, and less secure for women workers in SOEs, indicating an increased discrimination against women in employment in SOEs. Second, laid-off workers from SOEs were sent to local labour markets to seek jobs in the emergent private sector. However, as discussed, under the promotion of profit maximisation, females, especially married women and mothers, suffer much greater discrimination in this most liberalised sector than in the SOEs, showing less employment opportunity in higher paying industries (occupation segregation), lower hierarchal level within the sector or industry, less opportunity for firm-specific training, and so on. As the market transition progresses

and the share of the private sector continue to grow, gender discrimination, therefore, tends to increase over time.

Findings on wage discrimination among sectors, however, remain controversial. Although many studies argued that the most liberalised sector (private sector) has the largest wage discrimination and the least liberalised sector (SOEs) has the smallest in China (Maurer-Fazio & Hughes, 2002; Shu, 2005; Shu & Bian, 2003), Liu, Xin, and Zhang (2000) indentified the opposite conclusion. Theirs is somewhat consistent with Meng's (1998) finding, in which the gender wage differential is fully associated with discrimination of workers assigned by local governments, and only two-thirds of this gap is attributed to discrimination against those who obtained jobs by themselves. The topic of wage discrimination has attracted much speculation, but only a few direct empirical studies in China. Based on my knowledge, only Dong, Yang, Du and Ding (2006) and Gustafsson and Li (2000) have provided direct empirical studies on this issue, arguing that both earnings and wage discrimination have increased markedly in the radical reform phase in China. Discussions on comparisons between China and other countries on this issue remain unfounded and unsupported by research, and hence, further studies on this topic are recommended. It is important to bear in mind that if Liu, Xin, and Zhang's conclusion is correct, we may need to review Dong et al. and Gustafsson's et al. conclusion, because the diminishing and increasing share of SOEs and private sector in employment, respectively, may result in a declining wage inequality in terms of gender.

Apart from the restructuring of SOEs and privatisation, many other factors could have effects on gender discrimination, such as policy and foreign investment. With respect to policy two current policies are concerned to have negative effects on gender inequality in China. As discussed (see my 'Human Capital' section), the legal retirement age for women is five years earlier than for men in both white-collar (55 for women) and blue-collar (50 for women) jobs in China. Such an unequal policy substantially enhances discrimination against females. Lack of union organisation is another major factor that contributes to gender discrimination. China has not ratified the forced labour and union rights conventions of the International Labour Organisation (ILO). There is only one union organisation in China, called 'All-China Federation of Trade Unions', but it does not engage in collective bargaining or make demands on employers (Dong, et al., 2007). Since a union is one of the most effective

means to address discrimination, especially for particular groups such as wives and mothers, ratifying and enforcing the forced labour and union rights conventions would be one of the major ways to reduce discrimination. Regarding foreign investment, many studies argue that it has diminishing effects on gender inequality and discrimination, where a decrease could reduce it.[36]

Discrimination leads not only to gender disparities at one point in time, but also to a growing inequality between men and women over their life cycle from a variety of sources. As a consequence, the cumulative effect of discrimination over their lifetime is much larger than that shown at one point in time. However, the effect of discrimination on lifetime gender wage inequality is indirect, through the influences of other factors. For instance, recalling the discussion in human capital section, OJT is positively associated with one's wage rates over the life cycle, but discrimination could somehow reduce the chance of female workers on obtaining OJT, especially for firm-specific training which has greater effects on one's wage rates. Therefore, discrimination enlarges women's disadvantage on obtaining OJT, and hence, accumulates a greater wages gap between genders over their life cycle. Similar effects also appear in both inter-sector and intra-sector progress. For example, discrimination reduces women's opportunities to enter or move to the primary sector, and gain or move to the primary jobs within both primary and secondary sectors (see the dual labour market theory in my 'human capital' section). Since men have a higher probability to gain access to primary sector jobs, female workers, thus, are trapped in secondary sector jobs. Low wages and dead-end secondary jobs diminish a female's incentives to work, may cause them to engage in frequent job changing, frequent job interruptions, tardiness, not taking training opportunities, and so on. These traits reinforce employers' prejudice and discrimination of female workers, creating a vicious circle against women's access to primary sector jobs (Blau, et al., 2006; Kaufman & Hotchkiss, 2003).

Even worse, females receive fewer promotions and job ladder rewards in the internal labour market in both primary and secondary jobs. The set of subtle barriers that discriminate against women to receive promotions and to reach the upper echelons

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[36] However, since it is not in the analytic interests of this study, I give no further attention to this topic; relative discussions on this issue (in China) could be found in the study of Shu, Zhu and Zhang (2007).

within a firm is regarded as the 'glass ceiling' effect. Many empirical studies have shown that disparities in the representation of women at the upper levels in firms exist in both America and China, indicating negative effects of the glass ceiling on women's wage rate and occupational achievement (Blau, et al., 2006; Chi & Li, 2008; Huffman, 2004). As a consequence, the gender earnings gap becomes larger and larger over men and women's life cycle.

In the labour market, women suffer two types of wage discrimination for equal work or jobs of equal value within firms. The first type is that female workers are paid less than male workers for doing exactly or substantially the same job. This type of discrimination, however, is rare in the real world, because it is declared illegal by "equal pay for equal work" acts in most countries (including China). It is important to bear in mind that some policies that use some hiring criteria to get more productive workers, may have disparate impacts on gender, eliminating more women than men. As we discussed in the early sections, the characteristics of female workers and gender discrimination in the labour market reduces their 'value' to employers. Since employers have to pay the same wages to women doing equal work to men under the law of 'equal pay for equal work', they face strong barriers to hire, train, and promote female workers who are more uncertain, on job loyalty and production, and less valuable. Instead, equally qualified/productive male workers are preferred for primary sector jobs, especially those jobs requiring job loyalty, fewer interruptions, and a longer working life. As a result, female workers are disproportionally employed in secondary sectors and jobs, which is an unintended consequence of the equal pay for equal work policy. Neoclassical economists, however, do not see such policies as discriminatory, because they define discrimination as treating equally productive workers differently and such discrimination should be offset by competition in the labour market, thus de-emphasising its importance (England, 2005). In my understanding, the fewer opportunities for women in hiring, training, and promoting progress in the labour market is not in the consideration of neoclassical economists; rather, they merely emphasise the gender wage disparities caused by such policies. It is worth pointing out that, unequal hiring, training, and opportunities for promotion between genders cause the gender wage gaps, especially over the life cycle, although wage discrimination is not attributed to these inequalities.

The second type is that the job structure within a firm is generally segregated by categories such as race and sex, and workers of each category are paid differently, even though each is "performing work that, although not the same, is of comparable worth or value to the employer" (England, 1992; Kaufman & Hotchkiss, 2003, p. 228). To remedy this problem, employers need to pay similar wages to workers in jobs that have similar value to the firm. This is regarded as the comparable worth law - "equal pay for jobs of equal value". However, the idea of comparable worth law is argued against by the large majority of economists[37].

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[37] Discussing the shortcomings of the comparable worth law is not in the analytic interest of this thesis, and thus given no further attention. A detailed discussion on this issue can be found in Kaufman and Hotchkiss's (2003, pp. 502-506) book.

Section 3: Research Design and Data Analysis

3.1: Data Description/Collection

The China Urban Labour Survey (CULS) was conducted from November 2001 to January 2002 in five large cities: Shenyang, Xian, Wuhan, Shanghai and Fuzhou. The survey was administered by the Institute for Population Studies at the Chinese Academy of Social Sciences, in collaboration with local offices of the National Statistical Bureau. There were three stages in the sampling process: "In stage one, *'jiedao'*[38] or neighbourhoods were selected in each city. All were listed with their population size, and the sampling interval was found by dividing the total population of the city by the number of *'jiedao'* chosen from the city. A random starting point was then selected. In stage two, *'juweihui'* or community residents' committees, were chosen from each *'jiedao'*, following the same procedure (random selection). In stage three, households were chosen in the same way (random selection). Within each city, 10 urban households in each of 70 *'juweihui'* and 10 migrants aged 16 and older in each of 60 *'juweihui'* were chosen and interviewed" (M. Wang & Cai, 2008, p. 444; Y. Zhang, et al., 2008, p. 1536). The urban household survey includes three parts: the community, household, and individual questionnaires. Individual information was obtained by interviewing every member aged 16 and over who was no longer in high school in the selected households. In this study, only data on urban households and individuals aged 16-75 will be analyzed, because 16 is the minimum legal working age and 60 is the female legal retirement age (The Central People's Government of the People's Republic of China, 1994). This paper also removed all cases with missing data on relevant variables. The total sample meeting these criteria is 4,043 cases.

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[38] The subdistrict (literally "street"), is one of the smallest political divisions of China. It is a form of township-level division which is typically part of a larger urban area.

3.2: Descriptive Statistics

Table 3.1 describes the gender gap in hourly income, human capital, family circumstances, social and political capital, occupation, sector placement, industrial sector, and city. Specifically, a positive (negative) figure in the final column indicates men earning more (less) than women on average, and the t-ratio is provided to illustrate the statistical significance of this gap. Among the thirty-nine measures, a significant gender gap was identified in twenty-four of them. For example, for the whole sample, the average hourly income of men is 27.28% higher than that of women. This can also be interpreted as on average, women made 78.57% of men's hourly earnings (Female IPH / Male IPH) in 2001. This is consistent with previous empirical studies, which have identified a 14-19% gross annual earnings gap, using the 1988 and 1995 CHIP dataset (Shu & Bian, 2002, 2003). Past research has also shown that this figure has increased dramatically to 35% by the end of the 1990s (Cohen & Wang, 2006; Shu, et al., 2007). Both gender gaps in age and experience are significant. The average male age is 44.14 which are more than 2.8 years older than female. This gap is equal to the experience inequality that favours men, indicating that by controlling ages, experience gap should not exist. Men on average are in better health than women, and the gap is statistically significant. This finding is consistent with Yu and Sarri's (1997) argument: the gender inequality in health favouring men exists in the urban Chinese labour market, by measuring in PQLI and GDI.

Men and women are equally likely to receive training and attain middle school and lower education. Gender gaps in other educational levels, however, are marked, with 33.1% more men having college and higher level education, while women with only high school and secondary technical school education are 16.53% and 22.98% higher than men, respectively; all of these gaps are statistically significant. In addition to gender, educational attainment is also associated with wages and age. Table 3.2 and Chart 3.1 exhibit the relationship between hourly wages and educational level, suggesting a positive return to higher education for both genders. Chart 3.2 shows the relationship between age and educational level. According to the chart, we can identify a lower average educational level for people aged about 43 to 53. This result is consistent with the early argument that the Cultural Revolution has had a significantly negative effect on the formal education of a whole generation. Chart 3.3 shows the relationship among age, gender, and educational level. For females, the

college and higher educational level attainment rate increases with the decline of age, indicating that a young female is more likely to receive college and higher education today. Despite more males holding college and higher educational levels on average, the increase rate for males is much flatter than that for females, indicating that the gender gap in higher educational level is diminishing over time.

Table 3.2 Income and Educational Attainment

Educational Attainment	Mean	Female	Male
Middle School and Lower	25.28	20.78	28.96
High School	30.77	26.71	34.93
Secondary Technical School	39.42	37.68	41.36
College and Higher	52.92	48.94	55.47

Chart 3.1: Income and Educational Attainment
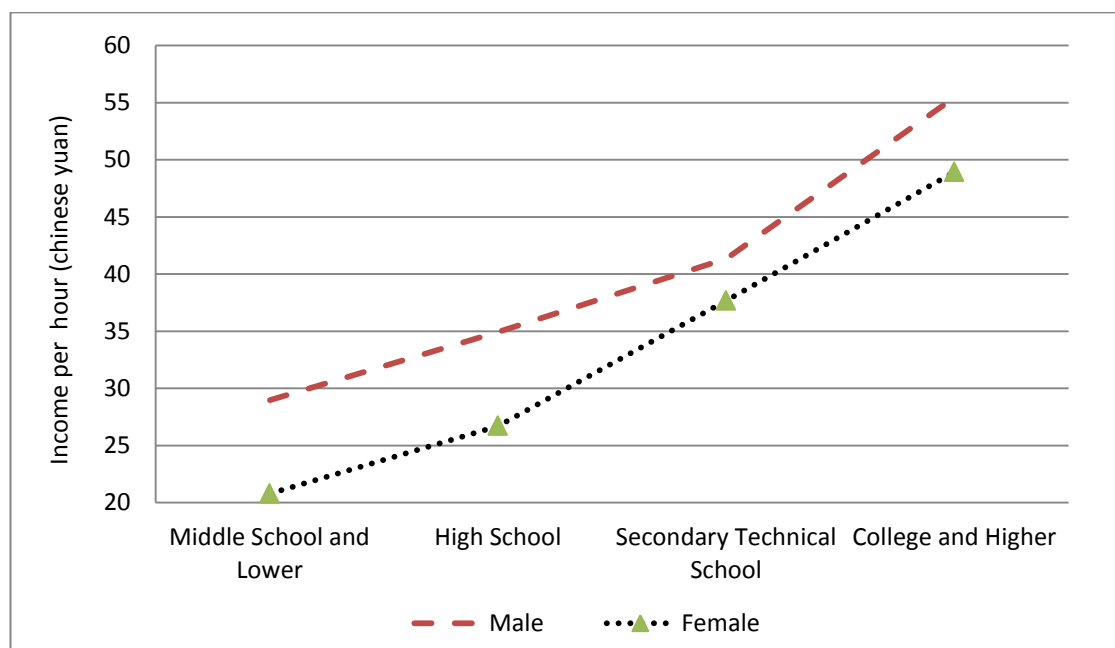
Chart 3.2: Educational Attainment and Age
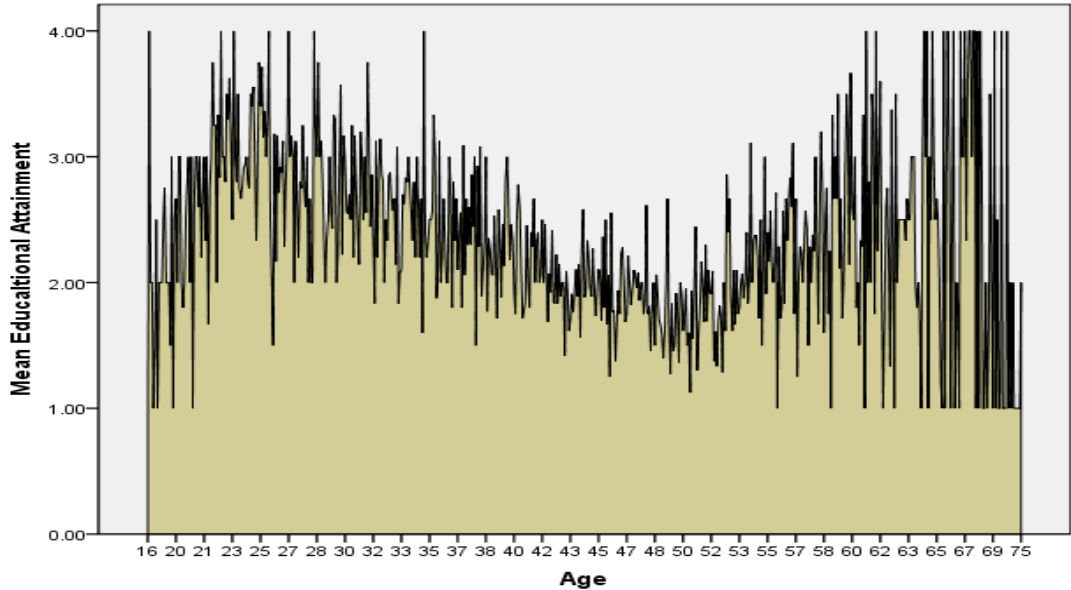
Chart 3.3: Population with (Non-) Undergraduate and Higher Educational level by Age and Gender
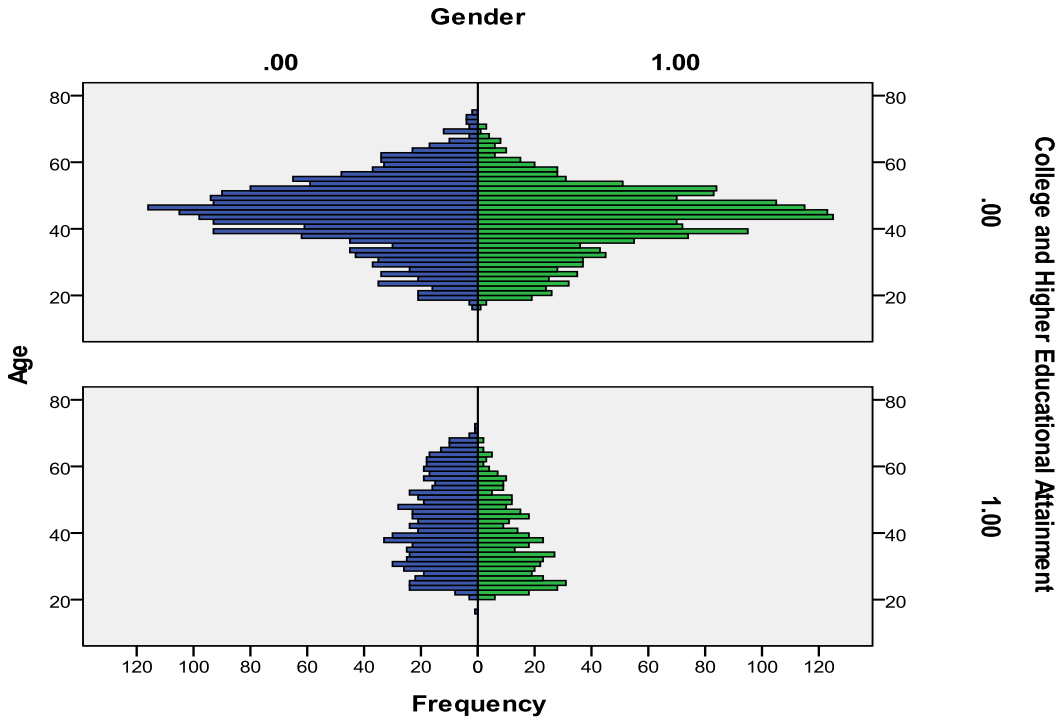
Note: The upper graph (with .00 on the right) measures population who are not with college and higher educational level. The lower graph (with 1.00 on the right) measures population with college and higher educational level. Bars on left hand side (with 0.00 on the top) measure male population, and bars on right hand side (with 1.00 on the top) measure female population

Table 3.1: Descriptive Statistics

Variable	Definition	Mean (Standard deviation)			Gender Gap (t-ratio)
		All	Males	Females	
IPH - income per hour (RMB)	Dependent variable: W_i	35.41 (41.11)	39.29 (44.2)	30.87 (36.68)	27.28% (6.96***)
Female	Dummy variable: 1 = Female, else 0	42.83 (11.25)	44.14 (11.61)	41.3 (10.6)	2.84 (8.605***)
EDU Middle School and Lower - Reference educational level	Dummy variable: 1= middle school or lower educational level, 0 otherwise	0.338 (0.47)	0.344 (0.48)	0.33 (0.47)	0.043 (1.023)
EDU High School (EDUhigh)	Dummy variable: 1= education is higher than middle school level but lower or equal to high school level, 0 otherwise	0.3 (0.46)	0.275 (0.45)	0.329 (0.47)	-0.165 (-4.024***)
EDU Secondary Technical School (EDUsts)	Dummy variable: 1= education is higher than high school level but lower or equal to secondary technical school level, 0 otherwise	0.114 (0.32)	0.1 (0.3)	0.13 (0.34)	-0.23 (-3.177***)
EDU College and Higher (EDUcollege)	Dummy Variable: 1= education is higher than secondary technical school level, including junior college, under graduate; post graduate, master; doctor and etc, 0 otherwise	0.249 (0.43)	0.281 (0.45)	0.211 (0.41)	0.331 (5.484***)
Age	Ages	42.83 (11.25)	44.14 (11.61)	41.3 (10.6)	2.84 (8.605***)
Experience	Total amount of working experience in every kind of industries and jobs	17.27 (10.62)	18.57 (11.13)	15.74 (9.78)	2.83 (9.073***)
Training	Dummy variable: 1= ever had training, 0 otherwise. Ever had on the job training experience. The training experience includes on the job training organized by the work unit, training in special techniques provided by professional training organization, and re-employment training provided by the government.	0.145 (0.46)	0.138 (0.45)	0.154 (0.47)	-0.102 (-1.146)

Health Status	Code 1 to 5 from the very poor to excellent. It measures how satisfied the person is with his/her health at his/her age.	3.55 (0.87)	3.62 (0.87)	3.47 (0.86)	0.15 (5.898***)
Non-Married	Dummy variable: 1 = never married, 0 otherwise. divorced and widowed individuals are not included in the non-married category	0.12 (0.32)	0.128 (0.33)	0.111 (0.31)	0.153 (1.757*)
Childcare	In the past years, on average, how many hours the person spend on taking care of children per day,	1.11 (2.02)	0.75 (1.53)	1.53 (2.41)	-0.51 (-13.316***)
Household Work	In the past years, on average, how many hours the person spend on non-paid household work per day,	2 (1.63)	1.37 (1.29)	2.76 (1.68)	-0.504 (-31.697***)
Father's Administrative Level	The administrative level of the person's father. Code 1 (none) to 5 (Ju and above)	0.36 (0.86)	0.33 (0.83)	0.39 (0.9)	-0.06 (-2.485**)
Mother's Administrative Level	The administrative level of the person's mother. Code 1 (none) to 5 (Ju and above)	0.09 (0.4)	0.09 (0.39)	0.1 (0.41)	-0.01 (-1.425)
CCP - Chinese Communist Party Membership	Dummy variable: 1 = membership of Chinese Communist Party, 0 otherwise	0.225 (0.42)	0.278 (0.45)	0.163 (0.37)	0.706 (9.393***)
Worker - Reference Occupation Position	Dummy variable: 1 = Office clerks, skilled workers, and unskilled workers, 0 otherwise	0.572 (0.49)	0.554 (0.5)	0.594 (0.49)	-0.068 (-2.756***)
Professional Worker	Dummy variable: 1 = professional skilled or technical worker, 0 otherwise	0.178 (0.38)	0.181 (0.39)	0.174 (0.38)	0.039 (0.6)
Administrator	Dummy variable: 1 = any level of administrator, 0 otherwise	0.192 (0.39)	0.192 (0.39)	0.192 (0.39)	-0.036 (-0.057)
Professional and Administrator	Dummy variable: 1= the person is professional worker and administrator, 0 otherwise	0.058 (0.23)	0.073 (0.26)	0.039 (0.19)	0.875 (4.974***)
State-Owned - Reference Industry ownership	Dummy variable: 1 = enterprises entirely or majorly holding by the Chinese centre or local government (foreign joint ventures are not included), 0 otherwise.	0.726 (0.45)	0.741 (0.44)	0.708 (0.45)	0.046 (2.463**)
Collectively Owned	Dummy variable: 1 = enterprises entirely or majorly holding by Collective founded (foreign joint ventures are not included), 0 otherwise	0.068 (0.25)	0.058 (0.23)	0.08 (0.27)	-0.282 (-3.033***)

Privately Owned	Dummy variable: 1 = enterprises entirely or majorly holding by Private founded (foreign joint ventures are not included), 0 otherwise	0.148 (0.35)	0.144 (0.35)	0.152 (0.36)	-0.053 (-0.767)
Foreign Joint	Dummy variable: 1 = foreign joint ventures (including enterprises that entirely, majorly, or partly holding by Overseas founded), 0 otherwise	0.059 (0.24)	0.058 (0.23)	0.06 (0.24)	-0.032 (-0.271)
Shanghai – reference city	Dummy variable: 1 = Shanghai, 0 otherwise	0.238 (0.43)	0.236 (0.42)	0.24 (0.43)	-0.015 (-0.284)
Wuhan	Dummy variable: 1 =Wuhan, 0 otherwise	0.211 (0.41)	0.21 (0.41)	0.212 (0.41)	-0.011 (-0.194)
Shenyang	Dummy variable: 1 = Shenyang, 0 otherwise	0.16 (0.37)	0.167 (0.37)	0.151 (0.36)	0.105 (1.465)
Fuzhou	Dummy variable: 1 = Fuzhou, 0 otherwise	0.193 (0.39)	0.19 (0.39)	0.197 (0.4)	-0.038 (-0.633)
Xian	Dummy variable: 1 = Xian, 0 otherwise	0.199 (0.4)	0.197 (0.4)	0.2 (0.4)	-0.013 (-0.217)
Manufacturing – reference industrial sector	Dummy variable: 1= Manufacturing, 0 otherwise	0.297 (0.46)	0.314 (0.46)	0.277 (0.45)	0.135 (2.769***)
Power Supply	Dummy variable: 1= Power Supply, 0 otherwise	0.052 (0.22)	0.059 (0.24)	0.045 (0.21)	0.313 (2.128**)
Construction and Mining	Dummy variable: 1= Construction and Mining, 0 otherwise	0.077 (0.27)	0.087 (0.28)	0.064 (0.25)	0.364 (2.961***)
Transportation, Warehousing, Posts, and Telecommunications	Dummy variable: 1= Transportation, Warehousing, Posts, and Telecommunications, 0 otherwise	0.089 (0.28)	0.118 (0.32)	0.055 (0.23)	1.165 (7.612***)
Retail and Whole Sale (Trading)	Dummy variable: 1= Retail and Whole Sale (Trading), 0 otherwise	0.1 (0.3)	0.081 (0.27)	0.123 (0.33)	-0.343 (-4.751***)
Finance, Insurance, and Real Estate	Dummy variable: 1= Finance, Insurance, and Real Estate, 0 otherwise	0.035 (0.18)	0.036 (0.19)	0.034 (0.18)	0.068 (0.422)
Social Service	Dummy variable: 1= Social Service, 0 otherwise	0.094 (0.29)	0.066 (0.25)	0.128 (0.33)	-0.487 (-7.23***)
Medical Health	Dummy variable: 1= Medical Health, 0 otherwise	0.037 (0.19)	0.027 (0.16)	0.049 (0.22)	-0.444 (-3.876***)
Education	Dummy variable: 1= Education, 0 otherwise	0.069	0.057	0.083	-0.307

		(0.25)	(0.23)	(0.28)	(-3.385***)
Government Agencies	Dummy variable: 1= Government Agencies, 0 otherwise	0.063	0.068	0.057	0.203
		(0.24)	(0.25)	(0.23)	(1.602)
Other Industries	Dummy variable: 1= Others Industries, 0 otherwise	0.087	0.087	0.088	-0.013
		(0.28)	(0.28)	(0.28)	(-0.133)
Sample Size		4604	2483	2121	

The average time that men and women spend on childcare and non-paid household work is significantly different: a female spends twice as many hours as a male, consistent with early empirical findings discussed earlier (see "Family Circumstances" section). With respect to political capital, the proportion of CCP membership for females and males is 16.27% and 27.75%, respectively, and gender inequality is statistically significant, demonstrating that a gender gap remains in 2001. The male to female ratio in CCP was 2:1 in the 1980s and 1990s (Shu & Bian, 2003), and it decreased to 1.71:1 in this dataset. In other words, 70.56% more men than women are Chinese Communist Party (CCP) members.

There are more male professional and administrators (MP) (87.47%) than females, and women are more likely than men to be skilled and unskilled workers, but they are equally as likely to be administrators or professional workers. Gender gap in the ownership sector is also visible, with 4.57% more men in the state sector and 28.18% more women in the collective sector. Gender differences in private and foreign sectors, however, are not identified.

Gender gap in the industrial sector remains, with men more likely to be employed in manufacturing, power supply, construction and mining, and transportation, warehousing, posts, and telecommunications industries; and women in trading, social service, medical and health, and education sectors, consistent with results of the dataset from 1988 to 1995 (Shu & Bian, 2003). Men and women are equally likely to be employed in the other industries, which include finance, insurance, and real estate; government agencies; and other industries. Also, as expected, no gender variations were found in city sectors.

3.3: Methodology

To obtain 'robust' results and to consider the combined effects of city, industry, and individual level influences on gender inequality in income, this thesis estimated a series of regression models by applying the OLS fixed effect and GLS random effect methods. Naturally logged income per hour is the dependent variable of the equations. In model 1, city-industry level variables are estimated in the form of 'city + industrial sector', which includes four and ten dummy variables standing for city and industrial sector respectively. 'Shanghai' and 'Manufacturing' were set as the reference variables of the city and industrial sector, respectively. In contrast, 'city * industrial sector' are estimated as the level 2 variables in models 2 and 3. 'Shanghai Manufacturing' was set as the reference term of the other fifty-four dichotomous variables which stands for city * industrial sector in model 2. Level 2 categories were set as the subject of the random effects in model 3. Model 4 is the expanded form of model 1, investigating the gender earning differences among cities by adding 'city * gender' as the additional variables. Individual level variables were consistent in all three models. The summary of those four models was shown in table 3.2 as well.

Specifically, those four models are expressed as:

$$W_i = \beta_0 + \beta_1 G_i + \beta_k H_i + \beta_k F_i + \beta_k S_i + \beta_k P_i + \beta_k O_i + \beta_k G_i(H_i + F_i + S_i + P_i + O_i) + \beta_k U_i + \beta_k C_i + \beta_k I_i + e_i \qquad (Model\ 1)$$

$$W_i = \beta_0 + \beta_1 G_i + \beta_k H_i + \beta_k F_i + \beta_k S_i + \beta_k P_i + \beta_k O_i + \beta_k G_i(H_i + F_i + S_i + P_i + O_i) + \beta_k U_i + \beta_k CI_i + e_i \qquad (Model\ 2)$$

$$W_i = \beta_0 + \beta_1 G_i + \beta_k H_i + \beta_k F_i + \beta_k S_i + \beta_k P_i + \beta_k O_i + \beta_k G_i(H_i + F_i + S_i + P_i + O_i) + \beta_k U_i + e_i \qquad (Model\ 3)$$

Random Effects Subject: City*Industrial sector (CI_i)

$$W_i = \beta_0 + \beta_1 G_i + \beta_k H_i + \beta_k F_i + \beta_k S_i + \beta_k P_i + \beta_k O_i + \beta_k G_i(H_i + F_i + S_i + P_i + O_i) + \beta_k U_i + \beta_k C_i + \beta_k I_i + \beta_k GI_i + e_i \qquad (Model\ 4)$$

According to Heckman's sample selection model (1979), using non-randomly selected samples to estimate behavioural relationships as an ordinary specification bias may cause bias because of a missing data problem. Sample selection bias may arise from two ways: by self selection of the individuals or data units being investigated; and by analysts or data processors' decisions on sample selection. "in contrast to the usual analysis of 'omitted variables' or specification error in econometrics, in the analysis of sample selection bias it is sometimes possible to estimate the variables which when omitted from a regression analysis give rise to the specification error. The estimated values of the omitted variables can be used as regressors so that it is possible to estimate the behavioural functions of interest by simple methods" (Heckman, 1979, p. 153). Because the selection process that decides one's employment status is non-random and is related to income potential, it is necessary to apply Heckman's sample selection model to diminish this bias in the regression process. In Heckman's model, a dummy variable that indicates whether a person is employed or not is used as the dependent variable. The residual from the model, which reflects the related characteristics of the employment, is then used as a selection bias control factor in the second-stage substantive analysis.

Because the selection process that decides women's employment status is non-random and is related to income potential, the Heckman's sample selection model should be applied to take into consideration the existence of difference between employed and unemployed to diminish bias on coefficients. A dummy variable indicating whether or not a woman is employed should be used as dependent variable for the selection model, and the residual from the model, which reflects the characteristics relating to employment, should then be used as an additional independent variable in the second-stage substantive analysis as a selection bias control factor. The substantive analysis (in this case the analysis with hourly income as a dependent variable), thus produces unbiased coefficients of other predictors (Heckman, 1979; Winship & Mare, 1992; Y. Zhang, et al., 2008). However, since many independent variables in the wage models in this thesis are clearly not available for unemployed (include occupation, ownership sector, and industry sector), and investigating the effects of those variables on gender wages gap is one of the major purposes of this paper, I ignore the effect of sample selection bias.

3.4: Results & Discussion

Table 3.3 presents net effects of gender Ln hourly income by using a series of multilevel models as represented in models 1, 2, and 3. The results from model 1 (Table 3.4) displays that the coefficient for females is -0.2, indicating that after controlling for human capital, family circumstances, social and political capital, ownership sector, occupation, and city + industrial sector, the net gender gap in hourly income is 20%. This figure increases 0.018 to -0.182 in model 2 (Table 3.5), demonstrating that by controlling city * industrial sector rather than city + industrial sector, the net gender gap in hourly income decreases slightly to 18.%. In addition, by analysing model 2 with the random effect model, the coefficient for females increases another 0.022 to -0.160 (Table 3.6) which represents a 16% gender earnings gap that favours males. If females work as many hours as males on average, they represent a 3-10% higher net gender income gap than findings shown in datasets from the mid-1990s and earlier (Bian & Logan, 1996a; Hughes & Maurer-Fazio, 2002; Shu & Bian, 2002, 2003; Zhou, 2000; Zhou, Tuma, & Moen, 1996), and 4-8% lower than previous findings in 1999 and 2000 datasets (Cohen & Wang, 2006; Shu, et al., 2007), but is consistent with the analysis of another study using the same dataset as this thesis (Y. Zhang, et al., 2008). However, if a female works less than a male on average, the gender gap in annual or monthly income will be wider, and vice versa.

Table 3.3: Summary of Models and Coefficient for Female

		Gender Effect (Female =1)
Model 1:	Gender + Human Capital + Family Circumstances + Social and Political Capital + Industry and Occupations + City	-0.2**
Model 2:	Gender + Human Capital + Family Circumstances + Social and Political Capital + Industry and Occupations + Industrial sector * City	-0.182*
Model 3:	Random Effects Model of Model 2, "Industrial sector * City" is the subject	-0.160*

*** P≤0.01, **P≤0.05, *P≤0.1*

Table 3.4: OLS Regression of Ln Income per Hour – Model 1

(Constant)	2.939***(0.200)		
Age	0.004 (0.009)		
Age2	-0.0011 (0.000)		
Experience	0.019***(0.004)		
Experience2	-0.0029***(0.000)	**Female**	-0.2**(0.102)
EDUhigh	0.091**(0.037)	**EDUhigh * Female**	0.018 (0.053)
EDUsts	0.182***(0.053)	**EDUsta * Female**	0.050 (0.076)
EDUcollege	0.348***(0.045)	**EDUcollege * Female**	0.104 (0.068)
Health Status	0.069***(0.017)	**Health Status * Female**	0.004 (0.025)
Training	0.067**(0.032)	**Training * Female**	0.067 (0.046)
Non-Married	-0.125**(0.055)	**Non-Married * Female**	0.146**(0.072)
Childcare	-0.014 (0.010)	**Childcare* Female**	0.017 (0.012)
Household Work	-0.035 ***(0.012)	**Household Work * Female**	0.011 (0.015)
CCP	0.089**(0.035)	**CCP * Female**	-0.021 (0.056)
Professional Worker	0.412***(0.043)	**Professional Worker * Female**	-0.068 (0.063)
Administrator	0.353***(0.043)	**Administrator * Female**	-0.205***(0.062)
Professional and Administrator	0.375***(0.062)	**Professional and Administrator * Female**	-0.010 (0.104)
Father's Administrative Level	0.023*(0.013)		
Mother's Administrative Level	0.070**(0.028)		
Foreign Joint	0.109**(0.047)		
Collectively Owned	-0.266***(0.042)		
Privately Owned	-0.261***(0.033)		
Wuhan	-0.629***(0.032)		
Shenyang	-0.787***(0.034)		
Fuzhou	-0.137***(0.032)		
Xian	-0.706***(0.032)		
Power Supply	0.238***(0.049)		
Construction and Mining	0.122***(0.042)		
Transportation, Warehousing, Posts, and Telecommunications	0.240***(0.040)		
Trading	0.050 (0.040)		
Finance, Insurance, and Real Estate	0.374***(0.060)		
Social Service	-0.078*(0.040)		
Medical and Health	0.199***(0.059)		
Education	0.276***(0.048)		
Government Agencies	0.106**(0.048)		
Other Industries	0.115***(0.041)		
Adjusted R Square	0.377	**Std. Deviation**	0.6932
F	58.91	**Observations**	4603

*** $P \leq 0.01$, **$P \leq 0.05$, *$P \leq 0.1$*

Table 3.5: OLS Regression of Ln Income per Hour – Model 2

OLS (Fixed effects)

(Constant)	2.950***(0.202)
Female	-0.182*(0.102)
Age	0.005 (0.009)
Age2	-0.00012 (0.000)
Experience	0.018***(0.004)
Experience2	-0.00027***(0.000)
EDUhigh	0.097***(0.037)
*EDUhigh * Female*	0.013 (0.052)
EDUsts	0.196***(0.053)
*EDUsts * Female*	0.019 (0.076)
EDUcollege	0.363***(0.045)
*EDUcollege * Female*	0.085 (0.068)
Health Status	0.070***(0.017)
*Health Status * Female*	0.004 (0.025)
Training	0.059**(0.031)
*Training * Female*	0.071 (0.046)
Non-Married	-0.113**(0.055)
Non-Married Female*	0.129*(0.072)
Childcare	-0.016*(0.010)
Childcare Female*	0.018 (0.012)
Household Work	-0.036***(0.012)
*Household Work * Female*	0.011 (0.015)
Father's Administrative Level	0.026**(0.013)
Mother's Administrative Level	0.059**(0.028)
CCP	0.093***(0.035)
*CCP * Female*	-0.030 (0.055)
Professional Worker	0.409***(0.043)
*Professional Worker * Female*	-0.076 (0.063)
Administrator	0.340***(0.043)
*Administrator * Female*	-0.191***(0.061)
Professional and Administrator	0.354***(0.062)
*Professional and Administrator * Female*	0.000 (0.103)
Foreign Joint	0.129***(0.047)
Collectively Owned	-0.267***(0.042)
Privately Owned	-0.269***(0.033)

F = 36.94	
Sigma_u: 0.3794	R-sq: within = 0.2176
Sigma_e: 0.6875	R-sq: between = 0.3321
rho: 0.2334	R-sq: overall = 0.2348

*** P≤0.01, **P≤0.05, *P≤0.1*

Table 3.5: Statistics of City Industry level variables for Fixed Effect Model 2 (Cont'd)

Industry/City	Wuhan	Shenyang	Fuzhou	Xian	Shanghai
Manufacturing	-0.548***(0.058)	-0.785***(0.061)	-0.355***(0.058)	-0.750***(0.054)	
Power Supply	-0.418**(0.095)	-0.836***(0.109)	0.284**(0.143)	-0.491***(0.098)	0.307***(0.104)
Construction and Mining	-0.706***(0.081)	-0.758***(0.088)	-0.061 (0.112)	-0.440***(0.081)	0.166 (0.105)
Transportation, Warehousing, Posts, and Telecommunications	-0.592***(0.074)	-0.577***(0.102)	0.305***(0.086)	-0.527**(0.093)	0.240***(0.081)
Trading	-0.652***(0.089)	-0.573***(0.113)	-0.212***(0.076)	-0.750***(0.091)	0.069 (0.067)
Finance, Insurance, and Real Estate	-0.258*(0.139)	-0.568***(0.125)	0.335*(0.121)	-0.325**(0.164)	0.278***(0.111)
Social Service	-0.734***(0.075)	-0.812***(0.094)	-0.099 (0.091)	-0.769***(0.092)	-0.302***(0.076)
Medical and Health	-0.569***(0.128)	-0.716***(0.114)	0.199 (0.135)	-0.606**(0.147)	0.274**(0.113)
Education	-0.453***(0.086)	-0.502**(0.114)	0.071 (0.095)	-0.379***(0.090)	0.250**(0.110)
Government Agencies	-0.461***(0.110)	-0.591***(0.118)	0.028 (0.078)	-0.866***(0.115)	-0.115 (0.105)
Other Industries	-0.364***(0.089)	-0.747***(0.081)	0.002 (0.093)	-0.725***(0.090)	0.015 (0.080)
Adjusted R Square of Model 2	0.387	Std. Deviation	0.6875	F	21.23
Observations	4603				

*** $P \leq 0.01$, **$P \leq 0.05$, *$P \leq 0.1$

Table 3.6: GLS Regression of Ln Income per Hour – Model 3

	GLS (Random effects)	Differences on Coefficients (OLS-GLS)
(Constant)	2.593***(0.201)	-0.357
Female	-0.160*(0.103)	-0.166
Age	0.006 (0.009)	-0.001
Age2	-0.00012 (0.000)	0
Experience	0.018*** (0.004)	0
Experience2	-0.00029***(0.000)	0.00002
EDUhigh	0.098***(0.037)	-0.001
EDUhigh * Female	0.009 (0.053)	0.004
EDUsts	0.187***(0.053)	0.009
EDUsts * Female	0.034 (0.076)	-0.015
EDUcollege	0.352***(0.046)	0.011
EDUcollege * Female	0.086 (0.069)	-0.001
Health Status	0.068***(0.017)	0.002
Health Status * Female	0.001 (0.025)	0.003
Training	0.067** (0.032)	-0.008
Training * Female	0.072 (0.047)	-0.001
Non-Married	-0.096*(0.056)	-0.017
Non-Married* Female	0.123*(0.072)	0.006
Childcare	-0.018*(0.010)	0.002
Childcare* Female	0.019 (0.012)	-0.001
Household Work	-0.035***(0.012)	-0.001
Household Work * Female	0.006 (0.015)	0.005
Father's Administrative Level	0.024*(0.013)	0.002
Mother's Administrative Level	0.060**(0.028)	-0.001
CCP	0.083**(0.035)	0.01
CCP * Female	-0.021 (0.056)	-0.009
Professional Worker	0.428***(0.044)	-0.019
Professional Worker * Female	-0.074 (0.064)	-0.002
Administrator	0.352***(0.043)	-0.012
Administrator* Female	-0.194***(0.062)	0.003
Professional and Administrator	0.389***(0.062)	-0.035
Professional and Administrator * Female	0.014 (0.104)	-0.014
Foreign Joint	0.145***(0.047)	-0.016
Collectively Owned	-0.268***(0.043)	0.001
Privately Owned	-0.281***(0.033)	0.012

Wald chi2(34) = 1302.63		chi2(32) = -476.02
Sigma_u: 0.1945	R-sq: within = 0.2173	
Sigma_e: 0.6875	R-sq: between = 0.3512	Test: Ho: difference in coefficients not systematic
rho: 0.0741	R-sq: overall = 0.2380	

*** P≤0.01, **P≤0.05, *P≤0.1

According to models 1, 2 and 3, except for age, all measures of human capital have statistically significant positive effects on hourly wages. One additional year of experience brings $1.8 - 1.9\%$ increase in hourly income for both male and female, but the rate increases at a decreased rate, which is consistent with theories and previous empirical findings (Polachek, 2004; Qiu & Hudson, 2010).

Training is positively and equally associated with income for both genders. Men and women who have had training receive a $5.9 - 6.7\%$ higher wage premium than those who have never had any training. This is consistent with findings from developed western countries. Furthermore, as discussed earlier, due to the female worker's shorter working life and more frequent job interruptions, significant gender inequality in receiving training favouring men is often identified in western countries. However, there is no significant gender difference in receiving training in the Chinese labour market. One of the major reasons for this difference is the diverse age-labour force participation profile between the Chinese and western labour markets. The age-labour force participation profile of Chinese women is similar to that of men, which is an inverse U-shaped curve rather than the M-shaped relationship in western countries. As Meng (2000) argued: Chinese women rarely drop out the labour force because of marriage or childbirth, but exhibit strong and continuous labour force attachment. Therefore, it is not surprising that female workers receive a similar amount of training as men in the Chinese labour market, since they face fewer barriers to receiving training than in western countries.

Health status brings equal raises on hourly wages to both genders, and the benefit rate is between 6.8% (in model 3) and 7.0% (in model 2) per unit, indicating an intrinsic positive effect of health on earnings, and a non-significant gender wage gap in the health sector. Coordinating this conclusion with the lower average health status of females, I could thus conclude that males receive a higher wage premium than females. This is consistent with WHO's proposition: the gender inequality in health has significant effects on gender earnings (The World Health Organization, 2009). However, it is important to bear in mind that the driver of gender inequality is the disparity in health status between genders, rather than inequality in earning returns to health.

With respect to education, compared with middle school and lower educational levels, high school, secondary technical school, and college and higher educational levels raise male's hourly income by 9.1% (9.7, 9.8), 18.2% (19.6, 18.7) and 34.8% (36.3, 35.2), respectively, suggesting that income returns to education increase with the rise of educational level. Since gender differences in income returns to educational attainment do not exist, males and females benefit equally from education. Although these results cannot provide exact values for the monetary return to each additional year of education, positive and growing coefficients for higher educational level are matched to the hypothesis made above and consistent with prior evidence. More importantly, although gender income gaps were not indentified among educational levels, significant gender differences within each educational attainment and overall average educational level are detected, indicating that lower average education and disproportionate allocation on college and higher education are major contributors to the lower hourly wages for Chinese female workers. Since the gender gap in education diminished over time in China (chart 2.2.1-2.2.3, 3.2), the gender income gap attributed to education differences, is therefore assumed to decrease over time also.

In accordance with previous discussions, childrearing and family responsibilities are associated with many other factors that have direct or indirect effects on wage rates, such as choice of occupation and industry, how much education to undertake, and so on. Since my models have controlled most of those variables, it is not necessary to directly investigate the effects of childrearing and family responsibilities on hourly income. Instead, I applied 'time spent on childcare' and 'time spent on non-paid household work' to explore their direct effects on income. Based on the results, time spent on childcare and non-paid household work significantly decrease one's hourly income by 1.6 – 1.8 and 3.5 – 3.6%, respectively, and the pattern holds for both genders. These findings are consistent with theoretical hypotheses: mothers and wives are less productive than non-mothers and single women because childrearing and more non-paid household work make them exhausted or distracted at work. Although there are no gender differences in income reduction to childcare and household work, gender gaps in those two variables are statistically significant. As expected, the average time that women spend on childcare and household work is twice that of men's, confirming previous empirical findings: women take primary responsibility for household and child related work. I could thus conclude that disproportionate

distributions of childcare and non-paid household work on females are major contributors to gender income inequality.

Marriage has significant positive effects on male's hourly wage, as non-married men earn 12.5% (11.3, 9.6) less than married. In contrast, single women earn 2.1% more than married in model 1; 1.6% more in model 2; and 2.7% more in model 3. In other words, by net of controls, females bear some wage losses from the marriage. This is consistent with Korenman and Neumark's marriage theory, claiming a positive and significant effect of marriage on male' earnings, and little (or even no) effect on the wage rates of Chinese women who exhibit strong and continuous labour force attachment (Bergstrom & Schoeni, 1996; Xin Meng, 2000). It is also consistent with the study of Shu and Bian (2003) on the 1995 CHIP dataset, which has clearly identified a positive and negative effect of marriage on male and female earnings, respectively. Recalling previous discussions in the family circumstances section, since Chinese women, like many elsewhere, bear primary responsibility for household work and childcare (Loscocco & Wang, 1992), it is not surprising that single women earn more than married, if household and childcare responsibility is one of the main contributors to the gap and is not controlled. It indicates a 'single women premium' after controlling for household and childcare responsibility. There are two possible explanations for this phenomenon. First, the employers' preference may contribute to the single women premium – they believe single women workers to be more stable, fewer mobile, and have less job interruptions. Second, since more and more women flow into more competitive sectors, the state and collective sectors also become more competitive along with the economic transition. Therefore, it is reasonable to conclude that the average income of single women exceeds that of married because the single women premium is more significant in the most competitive sectors (Hughes & Maurer-Fazio, 2002).

The income gap in political capital is also marked. This paper concludes an 8.3 to 9.3% CCP membership wage premium, consistent with many other studies, though the exact figure is slightly different. Earlier studies on the 1988 and 1995 CHIP dataset have indentified 6 and 8% CCP wage premium (Gustafsson & Li, 2000; Shu & Bian, 2003), respectively, and a more recent study based on the data from the urban portion of the national survey of women's status in China in 2000, has concluded an 11.3% CCP membership wage premium (Shu, et al., 2007). Another study using the same

dataset as this thesis has not found significant effect of CCP membership on wage rates (Y. Zhang, et al., 2008). However, that study concentrated only on those aged between 25 and 44 (Y. Zhang, et al., 2008), which is much narrower than the sample age group (16 – 75) of this study. The difference raises a question: does CCP membership contribute equally to youth, middle-age, and elder's income? This issue, however, is not in the analytic interest of this thesis, and is thus given no more attention, but studies on this topic are suggested. Regarding gender inequality, gender earnings gap in CCP membership was not found in any of those three models, consistent with findings of Shu, Zhu, and Zhang (2007). Nonetheless, the gap that favours females was identified by Shu and Bian (2003) in both 1988 and 1995. By running separate models by year and gender, Shu and Bian (2003) found that the CCP membership increased male and female earnings by 3 and 9% in 1988, and 6 and 10% in 1995, respectively. They demonstrated an increasing effect of CCP membership on earnings and a declining gender earnings gap in CCP membership from 1988 to 1995. Hence, it is not surprising the income returns to CCP membership becomes greater and the gender earnings gap in CCP membership disappears by 2001. Since gender gap in the CCP membership is still highly remarkable (1.71:1), disproportionate allocation of CCP membership between male and female, is thus another major driver of gender earnings gap.

As two measurements of social capital, father and mother's administrative levels are both found to have significant and positive effects on hourly wages, valued at 2.3-2.6 and 5.9-7%, respectively, consistent with theoretical hypothesis that guanxi (social capital in China) is positively associated with income.

With respect to the occupational segregation sector, male professional workers, administrators and PAs receive significantly higher wages than office clerks, unskilled and skilled workers. They earn 41.2% (40.9, 42.8), 35.3% (34, 35.2), and 37.5% (35.4, 38.9) higher, respectively. This pattern holds for females as well, but there is a significant gender income gap in administrators, indicating that the gap between female administrators and female workers is much smaller than that for male. Although previous studies on the urban Chinese labour market also confirmed that skilled and unskilled workers bear the lowest earnings, gender difference in earnings return to occupations is not found in those studies (Gustafsson & Li, 2000; Shu &

Bian, 2002, 2003; Shu, et al., 2007). Gender gaps across occupations are also remarkable, as men and women are disproportionally distributed as workers and PAs.

Models 1 to 3 show that workers in foreign joint ventures make 10.9 - 14.5% more income than state firms, $37 - 42.6$ and $37.5 - 41.3\%$ more than private collective firms, net of controls. It suggests three conclusions: foreign joint venture provides the highest average wages; income in the collective sector is less than that of the state sector; the private sector has a lower wage rate than the state sector. The first two conclusions correspond with previous studies (Gustafsson & Li, 2000; Hughes & Maurer-Fazio, 2002; Shu, 2005; Shu & Bian, 2003; Shu, et al., 2007). The last, however, is not fully consistent with previous findings. It is the opposite of analysis of the dataset from 2000 (Shu, et al., 2007), but is consistent with another argument on the $1988 - 1995$ CHIP dataset (Gustafsson & Li, 2000). However, most other previous empirical studies on this topic have combined the foreign with the private sector (named 'new sector'), which has often been identified as the highest income sector. Nonetheless, using such a combined indicator may not provide adequate results and may mislead people's understanding. In this thesis, although the foreign sector offers much higher wages than the state sector, the average wage in the private sector is substantially lower than in the state sector. Thus, the overall effect of the new sector cannot adequately reflect the real impact of foreign and private sectors. Recalling table 3.1, men and women are disproportionally allocated in the state (prefers male) and collective (prefers female) sectors, since the wage rate in the collective sectors is much lower than in the state sectors, and could thus conclude that disproportionate allocation of men and women in ownership sectors is another major cause of gender wage gap in the Chinese labour market.

As the most economically developed city in China, Shanghai offers the highest hourly income of the other four cities. According to the results of model 1, compared to Shanghai, employees in Shenyang, Xian, Wuhan, and Fuzhou receive 78.7, 70.6, 62.9, and 13.7% lower hourly wages than those in Shanghai, respectively; all of those coefficients are statistically significant at 0.001 confidence level. This finding is consistent with the post hoc tests on income across cities (table 3.7), which shows significant income gaps between Shanghai and the other cities (excluding Fuzhou), and the income gap between Shanghai and Fuzhou is not statistically significant. Since both Shanghai and Fuzhou are located in the south-east coastal region and have

significantly higher wages than the other three cities, it is reasonable to assume that the income in this more developed region is higher than in other regions. Thus, by regrouping the five cities into south-east coastal and non-south-east coastal regions, this paper finds that the average hourly wage in the south-east coastal region is almost twice as high as the non-south-east coastal region and the difference is statistically significant (table 3.9), consistent with previous studies (see "region and city size"). It is worth emphasising that although wage differences are significant between regions and among cities, they do not contribute to the gender wages gap (Model 4 - Table 3.8).

Table 3.7: Post Hoc Tests on Income per Hour (IPH) across Cities

(I) City	(J) City	Mean Difference on IPH (I-J)	Std. Error	Sig.
Shanghai	Wuhan	21.744*	0.669	0.000
	Shenyang	25.241*	0.725	0.000
	Fuzhou	-1.732	0.692	0.867
	Xian	22.353*	0.687	0.000
Wuhan	Shenyang	3.497	0.736	0.365
	Fuzhou	-23.475*	0.704	0.000
	Xian	0.610	0.699	0.997
Shenyang	Fuzhou	-26.972*	0.758	0.000
	Xian	-2.888	0.753	0.576
Fuzhou	Xian	24.085*	0.721	0.000

*: The mean difference is significant at the 0.05 level

Table 3.8: OLS Regression of Ln Income per Hour – Model 4

(Constant)	2.932***(0.201)		
Age	0.004 (0.009)		
Age2	-0.0011 (0.000)		
Experience	0.018***(0.004)		
Experience2	-0.0029***(0.000)	Female	-0.1800*(0.106)
EDUhigh	0.088**(0.037)	EDUhigh * Female	0.023 (0.053)
EDUsts	0.184***(0.053)	EDUsta * Female	0.051 (0.076)
EDUcollege	0.349***(0.045)	EDUcollege * Female	0.100 (0.069)
Health Status	0.070***(0.017)	Health Status * Female	0.004 (0.025)
Training	0.065**(0.032)	Training * Female	0.069 (0.046)
Non-Married	-0.125**(0.056)	Non-Married * Female	0.149**(0.072)
Childcare	-0.013 (0.010)	Childcare* Female	0.017 (0.012)
Household Work	-0.035 ***(0.012)	Household Work * Female	0.010 (0.015)
CCP	0.091***(0.035)	CCP * Female	-0.021 (0.056)
Professional Worker	0.410***(0.044)	Professional Worker * Female	-0.063 (0.064)
Administrator	0.350***(0.043)	Administrator * Female	-0.198***(0.062)
Professional and Administrator	0.371***(0.062)	Professional and Administrator * Female	-0.006 (0.104)
Wuhan	-0.619***(0.043)	Wuhan * Female	-0.020 (0.063)
Shenyang	-0.804***(0.046)	Shenyang * Female	0.039 (0.068)
Fuzhou	-0.101**(0.044)	Fuzhou * Female	-0.075 (0.064)
Xian	-0.716***(0.044)	Xian * Female	0.024 (0.064)
Father's Administrative Level	0.023*(0.013)		
Mother's Administrative Level	0.070**(0.028)		
Foreign Joint	0.110**(0.047)		
Collectively Owned	-0.264***(0.042)		
Privately Owned	-0.261***(0.033)		
Power Supply	0.236***(0.049)		
Construction and Mining	0.122***(0.042)		
Transportation, Warehousing, Posts, and Telecommunications	0.238***(0.040)		
Trading	0.048 (0.040)		
Finance, Insurance, and Real Estate	0.374***(0.060)		
Social Service	-0.080 ** (0.040)		
Medical and Health	0.196***(0.059)		
Education	0.273***(0.048)		
Government Agencies	0.103**(0.049)		
Other Industries	0.115***(0.041)		
Adjusted R Square	0.383	Std. Deviation	0.6933
F	54.44	Observations	4603

*** P≤0.01, **P≤0.05, *P≤0.1

Table 3.9: Independent Samples Test on Income per Hour (IPH) between South-East Coastal Region and other Region

Region	N	Mean	S.D
South-East-Coastal	1985	48.899	50.308
Other Regions	2619	25.187	28.489

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
IPH	Equal variances assumed	377.171	0	20.22	4602	0	23.71203	1.17268

Model 1(table 3.4) displays that by net of controls, social service is the industrial sector with the lowest income, followed by manufacturing and trading. Finance, insurance, and real estate; education; transportation, warehousing, posts, and telecommunications; and power supply are the top four industries in income. This is consistent with a recent study based on the National Survey on Women's Status in China in 2000, which identified significantly higher wages in finance and insurance; transportation, storage, posts, and telecommunications; power supply; construction; education; and medical health industries than the manufacturing sector. Similar results were also represented in Shu and Bian (2002, 2003) and Gustafsson and Li (2000).

More importantly, those findings do not support previous argument that feminisation of jobs is associated with lower earnings. According to table 3.1, there are four industrial sectors with a significant gender gap in occupational segregation preferring female workers, they are social service; trading; education; and medical health. On the one side, social service and trading are the lowest income industries, supporting the above argument. On the other hand, education and medical health are the second and fifth highest income sectors, against the argument. The conclusion is consistent regardless of whether by net of controls (table 3.4) or not (table 3.9). I thus deny the hypothesis that the wages rate in an industry is negatively associated with the proportion of female workers. One possible explanation is that the professional skill

level of the sector significantly contributes to its average wage level, and the high skill level in the education and medical health sectors partly counteracts the negative effect of occupational segregation.

Regarding industrial sectors across cities, social service is one of the lowest income industries in all five cities, and it is the lowest income sector in Shanghai and Wuhan. By contrast, finance, insurance, and real estate are the highest income industry in Fuzhou, Wuhan, and Xian. Employees in Shenyang earn significantly lower wages than manufacturing workers in Shanghai. Since manufacturing is one of the lowest income industries in Shanghai, it may indicate that employees there make higher wages than in Shenyang in all industrial sectors. Table 3.5 and chart 3.4 support this hypothesis, and demonstrate that this pattern holds for Wuhan[39] and Xian as well. Unlike Wuhan and Xian, education is the highest income sector in Shenyang, while finance, insurance, and real estate are the second highest. Power supply and government agencies are the lowest income sector in Shenyang and Xian, respectively. Social service is the second lowest income sector in both of those cities. Finance, insurance, and real estate; transportation, warehousing, posts, and telecommunications; and power supply in Fuzhou are the only non-Shanghai industrial sectors with significantly positive coefficient. Wages in those sectors in Fuzhou are 33.5, 30.5, and 28.4% higher than Shanghai manufacturing, respectively.

By contrast, wage rates in trading and manufacturing sectors in Fuzhou are significantly lower than Shanghai manufacturing. By comparing the wages ranking of a sector within and among cities, I found that the wages rate in the power supply industry in Shenyang is relatively lower than in other cities. Other findings include: wage rate in construction and mining sector is relatively higher in Xian; the trading sector has relatively higher income rate in Shenyang; the medical and health sector offers better pay than the education sector in the south-east coastal region (Shanghai and Fuzhou) and vice versa; lastly, government agency is one of the highest income sectors in Wuhan and Shenyang, but one of the lowest in Xian and Shanghai.

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[39] The income in finance, insurance, and real estate industry in Wuhan is a little bit higher than that in social service sector in Shanghai, it is the only exception (table 3.5 and chart 3.4)

Table 3.10: Post Hoc Tests on Income per Hour (IPH) across Industries

(I) Industrial Sector	(J) Industrial Sector	Mean Difference on IPH (I-J)	Std. Error	Sig.		(I) Industrial Sector	(J) Industrial Sector	Mean Difference on IPH (I-J)	Std. Error	Sig.
Manufacturing	Power Supply	-11.817*	2.803	0.001		TWPT	Trading	11.570*	2.725	0.001
	Construction and Mining	-4.911	2.395	0.613			FIR	-19.309*	3.723	0.000
	Transportation, Warehousing, Posts, and Telecommunications (TWPT)	-12.655*	2.259	0.000			Social Service	18.318*	2.763	0.000
	Trading	-1.084	2.162	1.000			Medical and Health	-2.359	3.660	1.000
	Finance, Insurance, and Real Estate (FIR)	-31.963*	3.333	0.000			Education	-9.271	3.000	0.073
	Social Service	5.663	2.210	0.269			Government Agencies	-4.534	3.081	0.929
	Medical and Health	-15.014*	3.263	0.000			Other Industries	2.686	2.818	0.997
	Education	-21.925*	2.501	0.000		Trading	FIR	-30.879*	3.665	0.000
	Government Agencies	-17.189*	2.597	0.000			Social Service	6.748	2.685	0.297
	Other Industries	-9.969*	2.278	0.001			Medical and Health	-13.929*	3.601	0.005
Power Supply	Construction and Mining	6.905	3.352	0.606			Education	-20.841*	2.928	0.000
	TWPT	-0.838	3.256	1.000			Government Agencies	-16.104*	3.011	0.000
	Trading	10.732*	3.190	0.032			Other Industries	-8.885*	2.741	0.047
	FIR	-20.147*	4.076	0.000		FIR	Social Service	37.627*	3.694	0.000
	Social Service	17.480*	3.223	0.000			Medical and Health	16.950*	4.405	0.006
	Medical and Health	-3.197	4.018	0.999			Education	10.038	3.875	0.254
	Education	-10.109	3.429	0.109			Government Agencies	14.775*	3.937	0.008

Construction and Mining	Government Agencies	-5.372	3.500	0.908	Social Service	Other Industries	21.994*	3.735	0.000
	Other Industries	1.848	3.270	1.000		Medical and Health	-20.677*	3.630	0.000
	TWPT	-7.743	2.913	0.219		Education	-27.589*	2.964	0.000
	Trading	3.827	2.839	0.960		Government Agencies	-22.852*	3.046	0.000
	FIR	-27.052*	3.807	0.000		Other Industries	-15.632*	2.779	0.000
	Social Service	10.575*	2.875	0.011	Medical and Health	Education	-6.911	3.814	0.773
	Medical and Health	-10.103	3.745	0.201		Government Agencies	-2.175	3.878	1.000
	Education	-17.014*	3.104	0.000		Other Industries	5.045	3.672	0.955
	Government Agencies	-12.277*	3.182	0.005	Education	Government Agencies	4.737	3.263	0.935
	Other Industries	-5.058	2.928	0.822		Other Industries	11.956*	3.015	0.004
					Government Agencies	Other Industries	7.220	3.096	0.412

*:The mean difference is significant at the 0.05 level

Chart 3.4: Comparsions of Coefficients Among Industrial Sectors by City Category
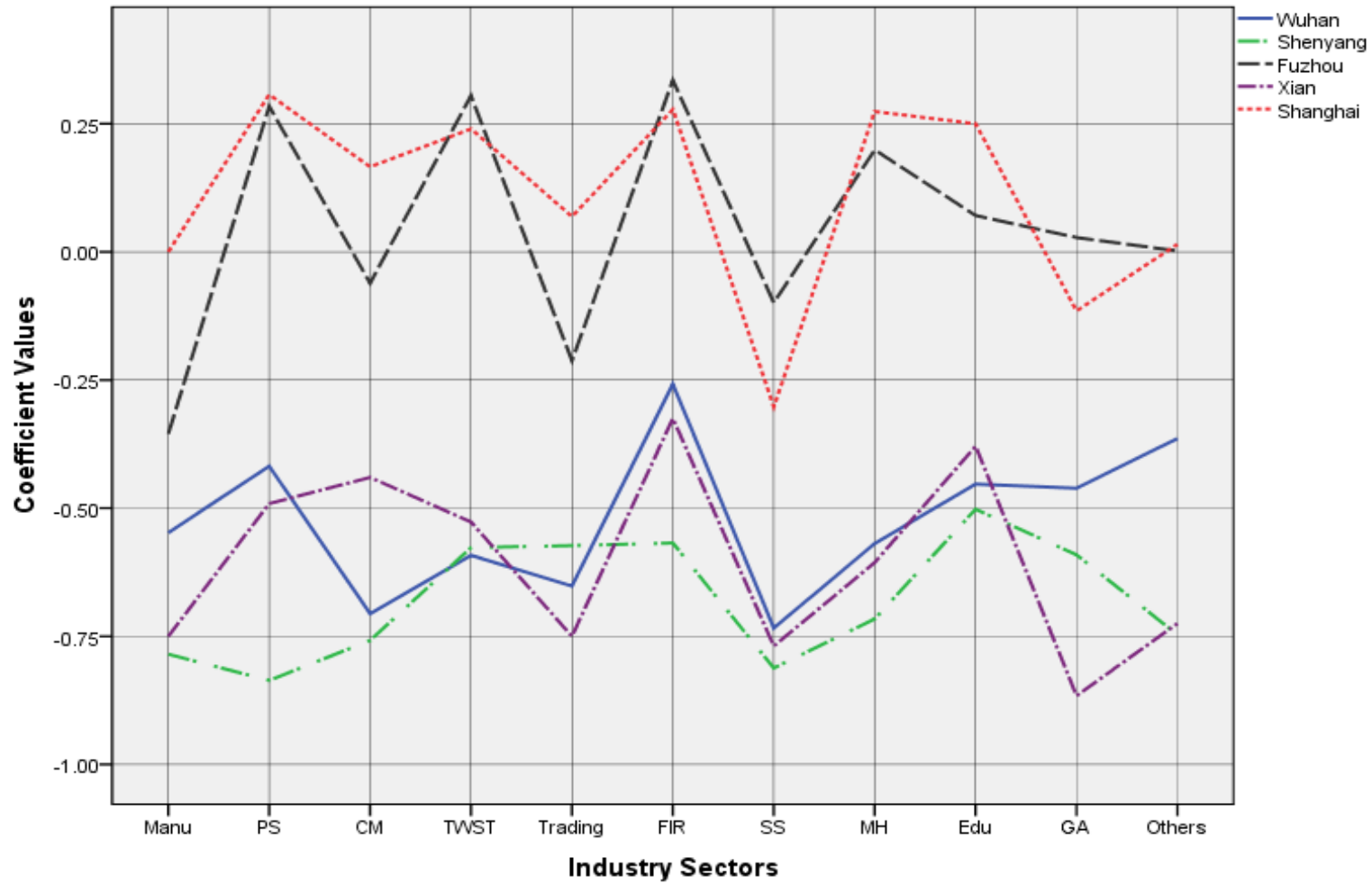
Conclusion and Policy Implications

The gender earnings gap in China was remarkable in 2001, when women made only 78.57% of men's earnings. This gap persists after controlling for individual, industry, and city level characteristics: women now make about 16 to 20% less than men do. The size of earnings in urban China is highly dependent on human capital, family circumstances, social and political capital, occupation, ownership and industrial sector, and geographic location. It is positively affected by work experience, educational level, health status, marriage, social capital, and CCP membership. The best paid occupations and work are professional workers, followed by PA and administrator; in foreign joint ventures, followed by the state sector and private sector; in the finance and insurance sector, followed by education, TWPT, and power supply. However, except for marriage and being an administrator, gender wage differentials are not significant in personal characteristics.

This research has made five key contributions to the literature: first, women remain disadvantaged along measures of educational level, experiences, family responsibilities, CCP membership, occupation, and ownership sector, indicating that except for disparate income returns to marriage and being an administrator, the gender earnings gap is primarily attributed to disproportionate allocation of those factors between genders, and the contribution of the latter overcomes the previous one. This finding answered our second research question: Is the gender earnings gap majorly caused by various income returns to examined variables or disproportionate allocation/distribution of them? However, these disadvantages do not appear to explain away gender differences in income, because the gender wage gap is still significant after controlling for these variables.

Second, disproportionate allocation of men and women in education is one of the core factors of the gap, consistent with the hypothesis of neo-classical theories, that women with lower educational level are more likely to work in the secondary sector, and spend more time on non-paid household work because of lower opportunity costs. The characteristics of a secondary job and heavy family responsibilities lead them to more frequent job interruptions, less energy for work, less reliability in work, fewer chances to accumulate experience, OJT, and social and political capital, shorter working life, and so on, reinforcing women's preferences for occupations with greater non-

pecuniary amenities (mother-friendly) and lower depreciation of human capital. From the employer's side, those behaviours confirmed and enhanced their discrimination of women workers so that they provided them with even fewer job opportunities, OJT, and promotion up the job ladder. As a consequence, returns to personal capital are much smaller for females than males, reducing female motivation on gaining human capital, forming a vicious circle. The finding responded to our third research question: does the vicious cycle against women exist in China?

Third, family circumstance appears to be another critical part of the story of gender differences in income: gaps are concentrated among married women, especially mothers. Conclusions on this issue are various among previous studies; nevertheless, a gender wage gap in marriage was identified by most of them. More importantly, family circumstance interacts with other personal capitals. Disproportionate allocation of men and women in family responsibilities negatively affect females' educational attainment, social and political capital, job opportunities, occupation and industry choices, and other opportunities after access to the job, such as on-the-job training and job ladder. We thus could also conclude that family circumstance is a critical part of the vicious cycle against women.

Fourth, the industrial and occupation sector, in my case, does not actually contribute to the gap. First, females are not more like to segregate into low-paying industries. Although females concentrate in social service and trading industries offering the lowest income, there are significantly more females than males in education and medical health sectors, providing higher (than average) income. In addition, there is no significant gender difference in finance, insurance, and real estate, which is the highest income sector. Second, female-dominated industries do not have to be associated with lower earnings (medical health and education). This result is not consistent with previous studies that argued average earnings are lower in female-dominated sectors, and both men and women are paid less in predominantly female sectors. However, females are more likely to segregate into low-paying sectors (collective owned sector) and occupations (skilled and unskilled worker), though there is no significant gender difference in the foreign joint sector and professional worker occupation which are the best paid sector and occupation. Regarding to city sector, although inter-regional income disparities are significant, they are not associated with a city-level gender effect on income, indicating that by net of controls, the gender gap

in income remains constant among cities of different income and economic development level. This finding is consistent with previous studies that argued unbalanced income rate and economic development level are not associated with gender wage differentials among regions in China. This finding responds to our fourth research question: Do the inter-regional disparity contribute to gender earnings differential among different regions.

Finally, by controlling all of these variables, 16-20 percent gender wage gap remains unexplained, demonstrating that discrimination plays a critical part in the unequal wages for men and women in China. This is consistent with most previous studies in the Chinese labour market.

Based on these findings, improving gender equality in personal capital accumulation, especially for education, and decreasing gender inequality in family responsibilities are the two core solutions to the gender wage gap. From one perspective, the government needs to increase women's opportunity to access education. Since the enrolment status of children is significantly influenced by family income, reducing the direct costs of education should be an efficient method. In addition, increasing central- and local-government direct financial support for education for poor families and increasing the coverage of national education are found to be helpful also. From the other perspective, improving the elder- and childcare system (including welfare, medical care, pension systems, etc.) and promoting the development of an elder- and childcare industry could reduce the non-paid household work of both genders, especially for women, releasing them from heavy family responsibilities. Upholding the 'one-child policy' can contribute to gender equality in both educational attainment and family responsibilities, because it has had the unintended consequence of investing more resources in the education of the 'only' child, and there is no doubt that the number of children contributes to family responsibilities, especially for mothers.

In summary, our analysis contributes to sociologists' and economists' great interest in the relationship between the gender gap and wage differentials by examining the relationship between individual characteristics, industry segregation, geographic locations, and gender based wage differentials. This thesis points to new directions for future research on gender inequalities in China's transitional economy. One must

necessarily assess and measure the development of labour characteristics and patterns of gender segregation in any locality and time in which data about gender inequalities are collected. Discussions on the impact of marriage on labour outcomes and changes of attitudes and standards for being married are emerging. On the other hand, because of the limitations of the dataset and research methodology, this paper has a few limitations and thus suggests the following points for further research. One should distinguish firm-specific OJT from general OJT, because they are assumed to have significantly different effects on employee wage rates, job interruption frequency, occupational choice, etc., and men and women may be disproportionately allocated on firm-specific OJT. Furthermore, since the gender gap in income is partly attributed to social capital, especially in China, more appropriate variables may need to indicate social capital and investigate its effects on the gender wages gap.

References

Aigner, D. J., & Cain, G. G. (1977). Statistical Theories of Discrimination in Labour Markets. *Industrial and Labor Relations Review, 30*(2), 175-187.

Aigner, D. J., & Heins, A. J. (1967). On the Determinants of Income Equality. *American Economic Review, 57*, 176-184.

Akerlof, G. A., & Yellen, J. L. (1986). *Efficiency Wage Models of The Labour Market*. Cambridge: Cambridge University Press.

Al-Samarrie, A., & Mille, H. P. (1967). State Differentials in Income Concentration. *American Economic Review, 57*, 59-72.

Anker, R. (2001). Theories of Occupational Segregation by Sex: An Overview. In M. F. Loutfi (Ed.), *Women, Gender and Work*. Geneva: International Labour Office.

Appleton, S., Knight, J., Song, L., & Xia, Q. (2008). The Economics of Communist Party Membership: The Curious Case of Rising Numbers and Wage Premium during China's Transition. (December 30, 2009).

Arnold, F., & Zhaoxiang, L. (1986). Sex Preference for Children in China. *Population and Development Review, 12*, 221-246.

Arrow, K. (1973). The Theory of Discrimination. In O. Ashenfelter & A. Rees (Eds.), *Discrimination in Labour Market*. Princeton, NJ: Princeton University Press.

Arrow, K. J. (1962). The Economic Implications of Learnings by Doing. *Review of Economic Studies, 29*, 155-173.

Autor, D. H., Katz, L. F., & Kearney, M. S. (2008). Trends in U.S. Wage Inequality: Revising the Revisionists. *Review of Economics and Statistics, 90*(2), 300-323.

Autor, D. H., Katz, L. F., & Krueger, A. B. (1998). Have Computers Changed the Labour Market? *Quarterly Journal of Economics, 113*(3), 1169-1213.

Bacold, M., Blum, B. S., & Strange, W. C. (2009). Skills in the City. *Journal of Urban Economics, 65*(2), 136-153.

Bajona, C., & Chu, T. (2004). China's WTO Accession and Its Effects on State-Owned Enterprises. Hawaii: Working Paper Economics Series 70, East - West Centre.

Barkley, J., & Rosser, J. (2003). A Nobel Prize for Asymmetric Information: the economic contributions of George Akerlof, Michael Spence and Joseph Stiglitz. *Review of Political Economy, 15*(1), 3-21.

Batisse, C. (2002). Dynamic Externalities and Local Growth: A Panel Data Analysis Applied to Chinese Provinces. *China Economic Review, 13*, 231-251.

Bauer, J., Wang, F., Riley, N. E., & Zhao, X. (1992). Gender Inequality in Urban China: Education and Employment. *Modern China, 18*(3), 333-370.

Baum-Snow, N., & Pavan, R. (2009). Understanding the City Size Wage Gap Retrieved May 18, 2011, from www.econ.wisc.edu/workshop/Pavan_paper.pdf

Baum-Snow, N., & Pavan, R. (2010). Inequality and City Size Retrieved May 18, 2011, from www.econ.brown.edu/fac/nathaniel_baum-snow/ineq_citysize.pdf

Beaudry, C., & Schiffauerova, A. (2009). Who's right, Marshall or Jacobs? The Localization versus Urbanization Debate. *Research Policy, 38*, 318-337.

Becker, G. (1971). *The Economics of Discrimination* (2nd ed.). Chicago: University of Chicago Press.

Becker, G. S. (1973). A Theory of Marriage: Part 1. *Journal of Political Economy, 81*(4), 813-846.

Becker, G. S. (1985). Human Capital, Effort, and the Sexual Division of Labour. *Journal of Labour Economics, 3*(1), 33-58.

Becker, G. S. (1991). *A Treatise on the Family*. Cambridge, MA: Harvard University Press.

Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago: University of Chicago Press.

Becker, G. S., Michael, R. T., & Landes, E. M. (1977). An Economic Analysis of Marital Instability. *Journal of Political Economy, 85*(6), 1153-1189.

Beggs, J. J., & Hurlbert, J. S. (1997). The Social Context of Men's and Women's Job Search Ties: Voluntary Organization Memberships, Social Resources, and Job Search Outcomes. *Sociological Perspectives, 40*(4), 601-622.

Beneria, L. (2003). *Gender, Development, and Globalization*. New York: Routledge.

Benham, L. (1974). Benefits of Women's Education Within Marriage. *Journal of Political Economy, 81*, S57-S71.

Bergmann, B. R. (1974). Occupational Segregation, Wages and Profits When Employers Discriminate by Race or Sex. *Eastern Economic Journal, 1*(2), 103-110.

Bergstrom, T., & Schoeni, R. F. (1996). Income Prospects and Age At Marriage. *Journal of Population Economics, 9*, 115-130.

Beugelsdijk, S., & Smulders, S. (2003). Bonding and Bridging Social Capital: Which Type is Good for Economic Growth? In W. Arts, L. Halman & J. Hagenaars (Eds.), *The Culture Diversity of European Unity* (pp. 147-184). Brill: Leiden.

Bian, Y. (1987). A Preliminary Analysis of The Basic Features of The Life Styles of China's Single-Child Families. *Social Science in China, 8*, 189-209.

Bian, Y. (1994a). Guanxi and The Allocation of Urban Jobs in China. *The China Quarterly, 140*, 971-999.

Bian, Y. (1994b). *Work and Inequality in Urban China*. Albany: State University of New York.

Bian, Y., Logan, J., & Shu, X. (2000). Wage and Job Inequalities in the Working Lives of Men and Women in Tianjin. In B. Entwisle & G. Henderson (Eds.), *Re-Drawing Boundaries: Work, Households, and Gender in China*: University of California Press.

Bian, Y., & Logan, J. R. (1996a). Market Transition and Income Inequality in Urban China. *American Sociological Review, 61*(759-778).

Bian, Y., & Logan, J. R. (1996b). Market Transition and the Persistence of Power: The Changing Stratification System in Urban China. *American Sociological Review, 61*, 739-758.

Blau, F. D., & Ferber, M. (1991). Career Plans and Expectations of Young Men and Women. *Journal of Human Resources, 26*(4), 581-607.

Blau, F. D., Ferber, M. A., & Winkler, A. E. (2006). *The Economics of Women, Men, and Work* (5th ed.): Upper Saddle River, NJ : Pearson/Prentice Hall.

Blaug, M. (1976). The Empirical Status of Human Capital Theory: A Slightly Jaundiced Survey. *Journal of Economic Literature, 14*(3), 847-855.

Bourdieu, P., & Wacquant, L. (1992). *An Invitation to Reflexive Sociology*. Chicago: University of Chicago Press.

Brass, D. J. (1985). Men's and Women's Networks: A Study of Interaction Patterns and Influence in an Organization. *Academy of Management Journal, 28*(2), 327-343.

Brink, H. M. V. D., & Groot, W. (1997). A Household Production Model of Paid Labour, Household Work and Child Care. *De Economist, 145*(3), 325-343.

Budig, M., & England, P. (2001). The Wage Penalty for Motherhood. *American Sociological Review, 66*(2), 204-225.

Bureau of Statistics of Fuzhou. (2010). Statistics of Fuzhou - 2009 Retrieved May 22, 2011,   from http://www.fuzhou.gov.cn/tjj/njdtjsj/201003/t20100324_119787.htm

Bureau of Statistics of Shenyang. (2010). Statistics of Shenyang - 2009 Retrieved May   24,   2011,   from http://www.sysinet.gov.cn/Tjsj.aspx?LM_ID=6&LM_MX_ID=22

Bureau of Statistics of Wuhan. (2010). Statistics of Wuhan - 2009 Retrieved May 23, 2011, from http://www.whtj.gov.cn/documents/tjnj2009/index.htm

Bureau of Statistics of Xian. (2010). Statistics of Xian - 2009 Retrieved May 23, 2011, from http://www.xatj.gov.cn/article/sort052/list52_1.html

Burt, R. S. (1998). The Gender of Social Capital. *Relationality and Society, 10*, 5-36.

Burt, R. S. (2005). *Brokerage and Closure*. Oxford: Oxford University Press.

Cai, F., Du, Y., & Wang, M. (2005). *How Close is China to A Labour Market*. Beijing: The Commercial Press.

Campbell, K. E., & Rosenfeld, R. A. (1985). Job Search and Job Mobility: Sex and Race Differences. *Research in the Sociology of Work, 3*, 147-174.

Cao, Y., & Hu, C.-Y. (2007). Gender and Job Mobility in Post-socialist China: A longitudinal Study of Job Changes in Six Coastal Cities. *Social Forces, 85*(4), 1535-1560.

Cao, Y., & Nee, V. (2005). Remaking Inequality: Institutional Change and Income Stratification in Urban China. *Journal of Asia Pacific Economy, 10*(4), 463-485.

Carneiro, P., & Heckman, J. J. (2002). The Evidence on Credit Constraints in Post-Secondary Schooling. *Economic Journal, 112*, 705-734.

Charles, M., & Grusky, D. B. (2004). *Occupational Ghettos: The Worldwide Segregation of Women and Men*. Stanford, California: Stanford University Press.

Chen, J., & Fleisher, B. M. (1996). Regional Income Inequality and Economic Growth in China. *Journal of Comparative Economics, 22*(2), 141-164.

Chi, W., & Li, B. (2008). Glass ceiling or sticky floor? Examining the gender earnings differential across the earnings distribution in urban China. *Journal of Comparative Economics, 36*, 243-263.

China's National Bureau of Statistics. (1998). China Statistical Yearbook 1997. Retrieved   July   12,   2011 http://www.stats.gov.cn/ndsj/information/nj97/ml97.htm

China's National Bureau of Statistics. (2000). *China Statistical Yearbook*. Beijing: China Statistical Press.

China's National Bureau of Statistics. (2001). China Statistical Yearbook 2000. Retrieved   18   May,   2011,   from   China   Statistics   Press http://www.stats.gov.cn/ndsj/zgnj/mulu.html

China's National Bureau of Statistics. (2003). China Statistical Yearbook 2002. Retrieved July 12, 2011 http://www.stats.gov.cn/yearbook2001/indexC.htm

China's National Bureau of Statistics. (2005a). China Statistical Yearbook 2005. Retrieved   9   March,   2011,   from   China   Statistics   Press http://www.stats.gov.cn/tjsj/ndsj/2005/indexch.htm

China's National Bureau of Statistics. (2005b). Women and Men in China: Facts and Figures.   Retrieved   from www.stats.gov.cn/english/statisticaldata/otherdata/men&women_en.pdf

China Culture. (n.d.). Non-Communist Parties in China. Retrieved March 7, 2010, from http://www.chinaculture.org/library/2008-02/14/content_22254.htm

China Data Online. (2011). China Data Online. Retrieved June 8, 2011 http://chinadataonline.org

Cohen, P., & Bianchi, S. M. (1999). Marriage, Children, and Women's Employment: What Do We Know? *Monthly Labour Review, 122*, 22-31.

Cohen, P., & Wang, F. (2006). Contextualizing Gender Income Inequality in Post-Reform Urban China. Paper presented at the Annual Meeting of the American Sociological Association. Montreal, Canada.

Combes, P. (2000). Economic structure and local growth: France, 1984-1993. *Journal of Urban Economics, 47*, 329-355.

Combes, P., Duranton, G., Gobillon, L., & Roux, S. (2010). Estimating Agglomeration Economies With History, Geology, and Worker Effects. In E. L. Glaeser (Ed.), *Agglomeration Economics*. Chicago, IL: University of Chicago Press.

Congressoinal - Executive Commission on China. (n.d.). China's Household Registration (Hukou) System: Discrimination and Reform Retrieved June 7, 2011, from http://www.cecc.gov/pages/roundtables/090205/index.php

Conlisk, J. (1967). Some Cross-State Evidence of Income Inequality. *The Review of Economics and Statistics, 49*, 115-118.

Darity, W. A., & Mason, P. L. (1998). Evidence on discrimination in employment: Codes of colour, codes of gender. *Journal of Economic Perspectives, 12*, 63-90.

Davies, R., Elias, P., & Pierre, G. (2003). Estimates of Family Gap in Pay. Retrieved December 29, 2009, from www.warwick.ac.uk/ier/fenics/papers/Davies%20Elias.doc.

Dekle, R. (2002). Industrial concentration and regional growth: evidence from the prefectures. *Review of Economics and Statistics, 84*(2), 310-315.

Deng, Z. (1997). The Impact of the Cultural Revolution on Trends in Educational Attainment in the People's Republic of China. *AJS, 103*(2), 391-428.

Dickens, W. T., & Lang, K. (1985). A Test of Dual Labour Market Theory. *American Economic Review, 75*, 792-805.

Ding, S., Dong, X., & Li, S. (2009). Women's Employment and Family Income Inequality During China's Economic Transition. *Feminist Economics, 15*(3), 163-190.

Doeringer, P. B., & Piore, M. J. (1985). *Internal Labour Markets and Manpower Analysis*. New York: M.E. Sharpe.

Dong, X., Berik, G., & Summerfield, G. (2007). China's Transition and Feminist Economics. *Feminist Economics, 13*(3-4), 1-33.

Dong, X., & Bowles, P. (2002). Segmentation and discrimination in China's emerging industrial labour market. *China Economic Review, 13*, 170-196.

Dong, X., Yang, J., Du, F., & Ding, S. (2006). Women's Employment and Public-Sector Restructuring: The Case of Urban China. In G. Lee & M. Warner (Eds.), *Unemployment in China: Economy, Human Resource & Labour Markets* (pp. 87-107). London: Routledge Contemporary China Series.

Du, F., Yang, J., & Dong, X. (2006). Women's Employment and Industrial Restructuring in China: Investigation Using Urban Household Surveys. Addis Ababa: PEP Research Network General Meeting.

Easterlin, R. A. (1995). Preferences and Prices in Choice of Career: The Switch to Business, 1972-87. *Journal of Economic Behaviour and Organization, 27*, 1-34.

Echeverri-Carroll, E. L., & Ayala, S. G. (2011). Urban Wages: Does City Size Matter. *Urban Studies, 48*(2), 253-271.

Ellison, G., & Glaeser, E. L. (1997). Geographic Concentration in U.S. Manufacturing Industries: A Dartboard Approach. *Journal of Political Economy, 105*(5), 889-927.

Elson, D. (1999). Labour Markets as Gendered Institutions: Equality, Efficiency and Empowerment Issues. *World Development, 27*(3), 611-627.

Elson, D., & Cagatay, N. (2000). The Social Content of Macroeconomic Policies. *World Development, 28*(7), 1347-1364.

England, P. (1982). The Failure of Human Capital Theory to Explain Occupational Sex Segregation. *Journal of Human Resources, 18*, 358-370.

England, P. (1984). Wage Appreciation and Depreciation: A Test of Neoclassical Economic Explanations of Occupational Sex Segregation. *Social Forces, 62*, 726-749.

England, P. (1992). *Comparable Worth: Theories and Evidence*. New York: Aldine de Gruyter.

England, P. (1993). *Theory on Gender Feminism on Theory*. New York: Aldine De Gruyter.

England, P. (2005). Gender Inequality in Labor Markets: The Role of Motherhood and Segregation. *Social Politics: International Studies in Gender, State and Society, 12*(2), 264-288.

England, P., Reid, L. L., & Kilbourne, B. S. (1996). The effect of the sex composition of jobs on starting wages in an organization: Findings from the NLSY. *Demography, 33*, 511-521.

Fan, C. C. (1997). Uneven Development and Beyond: Regional Development Theory in Post-Mao China. *International Journal of Urban and Regional Research, 21*(4), 620-639.

Fang, H., Eggleston, K. N., Rizzo, J. A., & Zeckhauser, R. (2010). Female Employment and Fertility in Rural China: Harvard Kennedy School: Faculty Research Working Paper Series.

Farrington, J. (1995). Who's Under the Hard Hat? Non-traditional Jobs for Women and Men. *Career World, 23*, 22-27.

Fleisher, B., Li, H., & Zhao, M. Q. (2010). Human Capital, Economic Growth, and Regional Inequality in China. *Journal of Development Economics, 92*, 215-231.

Fleisher, B. M., & Chen, J. (1997). The Coast-Noncoast Income Gap, Productivity, and Regional Economic Policy in China. *Journal of Comparative Economics, 25*(2), 220-236.

Fleisher, B. M., & Wang, X. (2005). Returns to Schooling in China Under Planning and Reform. *Journal of Comparative Economics, 33*, 265-277.

Forni, M., & Paba, S. (2002). Spillovers and the growth of local industries. *Journal of Industrial Economics, 50*(2), 151-171.

Franzen, A., & Hangartner, D. (2006). Social Networks and Labour Market Outcomes: The Non-Monetary Benefits of Social Capital. *European Sociological Review, 22*(4), 353-368.

Frazis, H., Gittleman, M., Horrigan, M., & Joyce, M. (1998). Results from the 1995 Survey of Employer-Provided Training. *Monthly Labour Review, June*, 3-13.

Fuchs, V. (1967). Differentials in Hourly Earnings by Region and City Size, 1959. New York: National Bureau of Economic Research.

Fukuyama, F. (1995). *Trust: The Social Virtues and The Creation of Prosperity*. New York: The Free Press.

Gao, T. (2004). Regional Industrial Growth: Evidence From Chinese Industries. *Regional Science and Urban Economics, 34*, 101-124.

Gelb, A. (1990). TVP Worker's Incomes, Incentives and Attitudes. In W. A. Byrd & L. Qingsong (Eds.), *China's Rural Industry: Structure, Development, and Reform*. Oxford: Oxford University Press for the World Bank.

Glaeser, E. L., Kallal, H. D., Scheinkman, J. A., & Schleifer, A. (1992). Growth in Cities. *Journal of Political Economy, 100*, 1126-1152.

Glass, J. (1990). The Impact of Occupational Segregation on Working Conditions. *Journal of Economic Perspectives, 14*, 123-140.

Glass, J., & Gamarigg, V. (1992). Gender, Parenthood, and Job-Family Compatibility. *American Journal of Sociology, 98*(131-151).

Gold, T., Guthrie, D., & Wank, D. (2002). *Social Connections in China: Institutions, Culture, and the Changing Nature of Guanxi*. Cambridge: Cambridge University Press.

Goldin, C., & Katz, L. F. (2000). Career and Marriage in the Age of the Pill. *American Economic Review, 90*(2), 461-475.

Gong, T. (2002). Women's Unemployment, Re-employment, and Self-Employment in China's Economic Restructuring. In E. N.-L. Chow (Ed.), *Transforming Gender and Development in East Asia* (pp. 125-139). New York and London: Routledge.

Gray, J. S. (1995). The Causality Between Employment and Divorce. *Family Economics and Resource Management Biennia, 1*, 171-176.

Greene, W. H., & Quester, A. O. (1982). Divorce Risk and Wives' Labour Supply Behaviour. *Social Science Quarterly, 63*(1), 16-27.

Gregory, R. G., & Meng, X. (1995). Wage Determination and Occupational Attainment in the Rural Industrial Sector of China. *Journal of Comparative Economics, 21*(3), 353-374.

Growiec, J., & Growiec, K. (2010). Social Capital, Well-Being, and Earnings: Theory and Evidence from Poland. *European Societies, 12*(2), 231-255.

Gupta, M. D., Zhenghua, J., Bohua, L., Zhenming, X., Chung, W., & Hwa-Ok, B. (2003). Why is Son Preference So Persistent in East and South Asia? A Cross-Country Study of China, India and The Republic of Korea. *Journal of Development Studies, 40*(2), 153-187.

Gupta, S. (1999). The Effects of Transitions in Marital Status on Men's Performance of Housework. *Journal of Marriage and the Family, 61*(3), 700-711.

Gustafsson, B., & Li, S. (2000). Economic Transformation and the Gender Earnings gap in Urban China. *Journal of Population Economics, 13*, 305-329.

Guthrie, D. (2006). *China and Globalization: The Social, Economic, and Political Transformation of Chinese Society*. New York: Routledge.

Hansen, N. (1995). Addressing Regional Disparity and Equity Objectives Through Regional Policies: A Skeptical Perspective. *Papers in Regional Science, 74*(2), 89-104.

Hanson, S., & Pratt, G. (1991). Job Search and the Occupational Segregation of Women. *Annals of the Association of American Geographers, 81*, 229-253.

Hao, Y. (2001). Urban Poverty in China: An Emerging Challenge to an Economy in Transition. Retrieved from www.iussp.org/Brazil2001/s70/S71_01_Hao.pdf

He, C., & Pan, F. (2010). Economic Transition, Dynamic Externalities and City-Industry Growth in China. *Urban Studies, 47*(1), 121-144.

Heckman, J. J. (1979). Sample Selection Bias as Specification Error. *Econometrical 47*(1), 153-161.

Helwig, A. A. (1998). Gender-Role Stereotyping: Testing Theory with Longitudinal Sample. *Sex Roles, 38*, 403-423.

Henderson, V., Kuncoro, A., & Turner, M. (1995). Industrial Development in Cities. *Journal of Political Economy, 103*, 1067-1090.

Ho, C.-Y., & Li, D. (2009). The Nexus of Income and Size Distribution of Chinese Cities, 1984-2003. *Applied Economics Letters, 16*, 1677-1682.

Hotchkiss, J. L., & Moore, R. E. (1999). Testing for and Decomposing the Working Spouse Effect: Accounting for Endogeneity of the Wife's Decision to Work. *Industrial and Labour Relations Review, 52*(3), 410-423.

Huang, J.-T., Kuo, C.-C., & Kao, A.-P. (2003). The Inequality of Regional Economic Development in China between 1991 and 2001. *Journal of Chinese Economic and Business Studies, 1*(3), 273-285.

Huffman, M. L. (2004). Gender Inequality Across Local Wage Hierarchies. *Work And Occupations, 31*(3), 323-344.

Huffman, M. L., & Velasco, S. C. (1997). When more is less: Sex composition, organizations, and earnings in U.S. firms. *Work And Occupations, 24*, 214-244.

Hughes, J., & Maurer-Fazio, M. (2002). Effects of Marriage, Education, and Occupation on the Female/Male Wage Gap in China. *Pacific Economic Review, 7*(1), 137-156.

Hussain, A. (1994). Social Security in Present Day China and its Reform. *The American Economic Review, 84*(2), 276-280.

Internet Encyclopedia of Philosophy. (n.d.). Confucius (551-479 BCE) Retrieved 27 June, 2011, from http://www.iep.utm.edu/confuciu/

Iversen, T., Rosenbluth, F., & Soskice, D. (2005). Divorce and the Gender Division of Labour in Comparative Perspective. *Oxford Journals - Social Politics, 12*(2), 216-242.

Jacka, T. (1990). Back to the Work: Women and Employment in the Chinese Industry in the 1980s. *The Australian Journal of Chinese Affairs, 24*, 1-23.

Jacobs, J. (1969). *The Economy of Cities*. New York: Vintage.

Jian, T., Sachs, J. D., & Warner, A. M. (1996). Trends in Regional Inequality in China. *China Economic Review, 7*(1), 1-21.

John, G., Park, A., & Cai, F. (2006). How Has Economic Restructuring Affected China's Urban Workers? *The China Quarterly, 185*, 61-95.

Johnson, E. N., & Chow, G. C. (1997). Rates of Return to Schooling in China. *Pacific Economic Review, 2*(2), 101-113.

Johnson, W. R., & Skinner, J. (1986). Labour Supply and Marital Separation. *American Economic Review, 76*(3), 455-469.

Jones, F. L. (1983). Sources of Gender Inequality in Income: What the Australian Census Says. *Social Forces, 62*(1), 134-153.

Kadushin, C. (2002). The Motivational Foundation of Social Networks. *Social Networks, 24*, 77-91.

Kaufman, B. E., & Hotchkiss, J. L. (2003). *The Economics of Labour Markets* (6th ed.). Canada: South-Western.

Keith, K., & McWilliams, A. (1995). The Wage Effects of Cumulative Job Mobility. *Industrial and Labor Relations Review, 49*(1), 121-137.

Kenny, L. (1983). The Accumulation of Human Capital During Marriage by Males. *Economic Inquiry, 21*, 223-231.

King, A. (1982). Human Capital and the Risk of Divorce: An Asset in Search of a Property Right. *Southern Economic Journal, 49*(2), 536-541.

Kipnis, A. B. (1997). *Producing Guanxi*. Durham, North Carolina: Duke University Press.

Knight, J., & Song, L. (1999). *The Rural-Urban Divide: Economic Disparities and Interactions in China*. Oxford: Oxford University Press.

Knight, J., & Yueh, L. Y. (2002). The Role of Social Capital in The Labour Market in China. Oxford: Department of Economic, University of Oxford.

Korenman, S., & Neumark, D. (1991). Does Marriage Really Make Men More Productive. *Economic Inquiry, 26*, 282-307.

Landes, J. (1989). Marxism and The "Women Question". In S. Kruks, R. Rapp & M. Young (Eds.), *Promissory Notes: Women in The Transition to Socialism*. New York: Monthly Review Press.

Lapidus, J. (1993). Family Structure, Flexible Employment, and Labour Market Segmentation: Evidence from a Study of the Temporary Help Industry. *International Contributions to Labour Studies*, 91-100.

Lau, L. J., Qian, Y., & Roland, G. (2001). Reform without Losers: An Interpretation of China's Dual-Track Approach to Transition". *Journal of Political Economy, 101*(1), 120-143.

Lee, C. K. (1998). *Gender and the South China Miracle: Two Worlds of Factory Women*. Berkeley: University of California Press.

Lee, C. K. (2005). Livelihood Struggles and Market Reform: Unmarking Chinese Labour after State Socialism: Occasional Paper 2, United Nations Research Institute for Social Development.

Lee, J. (2000). Changes in the Sources of China's Regional Inequality. *China Economic Review, 11*(3), 232-245.

Leicht, K. T., & Marx, J. (1997). Does Who You Know Matter? The Effects of Information Job Finding Networks on Job Finding Among Men and Women. *Academy of Management Journal, 40*, 957-987.

Li, H. (2002). Economic Transition and Returns to Education in China. *Economics of Education Review, 22*, 317-328.

Li, H., & Zax, J. (2000). Economic Transition and Labour Supply in China. In Y. Wang & A. Chen (Eds.), *China's Labour Market and Problems of Employment* (pp. 217-233): Southwest University of Economics and Finance Press.

Li, P., Zhang, Y., & Zhao, Y. (2000). *Jiuye yu zhidu bianqian: liangge teshu qunti de qiuzhi guocheng [Employment and Institutional Change: Job Searches of Two Special Groups]*. Hangzhou, China: Zhengjiang People's Publishing House.

Li, Q. (1999). *China's National Income, 1952-1995*. Oxford: Westview Press.

Li, W. (2007). Family Background, Financial Constraints and Higher Education Attendance in China. *Economic of Education Review, 26*, 725-735.

Li, W., & Min, W. (2003). The Private Demand, Tuition and Higher Education Expansion in China. In W. Min, Z. Yang & W. Li (Eds.), *Raising Adequate Resources For Education* (pp. 15-39). Beijing: People's Education Press.

Li, X. (2011). The Divorce Rate in China, *People's Daily*. Retrieved from http://news.ifeng.com/mainland/detail_2011_06/02/6774335_0.shtml

Light, A., & Ureta, M. (1992). Panel Estimates of Male and Female Job Turnover Behaviour: Can Female Nonquitters be Identified? *Journal of Labour Economics, 10*(2), 156-181.

Lin, N. (2000). Ineuaqlity in Social Capital. *Contemporary Sociology, 29*(6), 785-795.

Lin, N. (2001). *Social Capital: A Theory of Social Structure and Action.* Cambridge: Harvard University Press.

Lippe, T. v. d. (1992). The Distribution of Household and Paid Labour in The Netherlands. *Mens en Maatschappij, 67*, 128-139.

Liu, J. (2007). Gender Dynamics and Redundancy in Urban China. *Feminist Economics, 13*(3-4), 125-158.

Liu, P.-W., Xin, M., & Zhang, J. (2000). Sectoral Gender Wage Differentials and Discrimination in the Transitional Chinese Economy. *Journal of Population Economics, 13*(2), 331-352.

Liu, W., Meng, X., & Zhang, J. (2000). Sectoral gender wage differentials and discrimination in the transitional Chinese economy. *Journal of Population Economics 13*, 331-352.

Long, J. E., Rasmussen, D. W., & Haworth, C. T. (1977). Income Inequality and City Size. *The Review of Economics and Statistics, 59*(2), 244-246.

Loscocco, K., & Wang, X. (1992). Gender Segregation in China. *Sociology and Social Research, 76*, 118-126.

Lu, M., & Wang, E. (2002). Forging Ahead and Failing Behind: Changing Regional Inequalities in Post-reform China *Growth and Change, 33*(1), 42-71.

Lucio, J. J. d., Herce, J. A., & Goicolea, A. (2002). The effects of externalities on productivity growth in Spanish industry. *Regional Science and Urban and Economics, 32*, 241-258.

Lundberg, S., & Pollak, R. A. (1993). Separate Spheres Bargaining and the Marriage Market. *Journal of Political Economy, 100*(6), 988-1010.

Lundberg, S., & Rose, E. (2000). Parenthood and the Earnings of Married Men and Women. *Labour Economics, 7*(6), 689-710.

Machpherson, D. A., & Hirsch, B. T. (1995). Wages and Gender Composition: Why Do Women's Jobs Pay Less. *Journal of Labour Economics, 13*, 426-471.

Marini, M. M., & Fan, P.-L. (1997). The Gender Gap in Earnings at Career Entry. *American Sociological Review, 62*, 588-604.

Marshall, A. (1989). *Principles of Economics*. London: Macmillan.

Maurer-Fazio, M. (2007). In Books One Finds a House of Gold: Education and Labour Market Outcomes in Urban China. In E. Hannum & A. Park (Eds.), *Education and Reform in China* (pp. 260-276): Routledge.

Maurer-Fazio, M., & Hughes, J. (2002). The Effects of Market Liberalization on the Relative Earnings of Chinese Women. *Journal of Comparative Economics, 30*(4), 709-731.

McAllister, I. (1990). Gender and the Household Division of Labor: Employment and Earnings Variations in Australia. *Work And Occupations, 17*(1), 79-99.

Medoff, J. L., & Abraham, K. G. (1981). Are Those Paid More Really More Productive? The Case of Experience. *Journal of Human Resources, 16*(2), 186-216.

Meng, X. (1995). *Zhongguo gaige dachaozhong de nvxing [Chinese Women in the Reforms]*. Beijing: China Social Sciences Publishing House.

Meng, X. (1998). Male-Female Wage Determination and Gender Wage Discrimination in China's Rural Industrial Sector. *Labor Economics, 5*, 67-89.

Meng, X. (2000). Institutions and Culture: Women's Economic Position in Mainland China and Taiwan: Manuscript: Department of Economics, Research School of Pacific and Asian Studies, Australian National University.

Meng, X. (2004). Economic Restructuring and Income Inequality in Urban China. *Review of Income and Wealth, 50*(3), 357-379.

Meng, X., & Gregory, R. G. (2002). The Impact of Interrupted Education on Subsequent Educational Attainment: A Cost of the Chinese Cultural Revolution. *Economic Development and Cultural Chine, 50*, 935-959.

Millimet, D. L. (2000). The Impact of Children on Wages, Job Tenure, and The Division of Household Labour. *The Economic Journal, 110*, 139-157.

Mincer, J., & Ofek, H. (1982). Interrupted Work Careers: Depreciation and Restoration of Human Capital. *Journal of Human Resources, 17*(1), 3-24.

Ministry of Civil Affairs of the People's Republic of China. (2010). Statistics of 2009 National Civil Affairs Retrieved July 9, 2011, from http://files.mca.gov.cn/cws/201001/20100128092527729.htm

Ministry of Civil Affairs of the People's Republic of China. (2011). Statistics of 2010 National Civil Affairs Retrieved July 9, 2011, from http://files2.mca.gov.cn/cws/201102/20110212093628359.htm

Mody, A., & Wang, F. Y. (1997). Explaining Industrial Growth in Coastal China: Economic Reforms... and What Else? *World Bank Economic Review, 11*, 293-325.

Montalto, C. P. (1994). Married Women's Labour Force Participation as Divorce Insurance. *Financial Counselling and Planning, 5*, 191-206.

Montgomery, J. D. (1991). Social Networks and Labour-Market Outcomes: Toward an Economic Analysis. *The American Economic Review, 81*(5), 1408-1418.

Moore, G. (1990). Structural Determinants of Men's and Women's Personal Networks. *American Sociological Review, 55*, 726-735.

Morrison, A., Raju, D., & Sinha, N. (2007). Gender Equality, Poverty and Economic Growth. Policy Research Working Paper. October 23, 2009, from http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2007/09/11/000158349_20070911132056/Rendered/PDF/wps4349.pdf

Munch, A., Mcpherson, J. M., & Smith-Lovin, L. (1997). Gender, Children, and Social Contact: The Effects of Childrearing for Men and Women. *American Sociological Review, 62*, 509-520.

Naughton, B. (1996). *Growing Out of the Plan: Chinese Economic Reform, 1978-1993*. Cambridge, UK: Cambridge University Press.

Neumark, D. (1996). Wage Differentials by Rave and Sex: The Roles of Taste for Discrimination and Labour Market Information. *Industrial Relations, 38*, 414-445.

Oi, J. C. (1989). *State and Peasant in Contemporary China: The Political Economy of Village Government*. Berkeley: University of California Press.

Okamoto, D., & England, P. (1999). Is There a Supply Side to Occupational Sex Segregation? *Social Logical Perspectives, 452*, 557-582.

Olsen, R. N., & Sexton, D. A. (1996). Gender Differences in the Returns to and the Acquisitionof On-the-Job Training. *Industrial Relations, 35*, 59-77.

Orszag, M. J., & Zoega, G. (1996). Hiring Risk and Labour Market Equilibrium (Vol. 1314): Centre for Economic Policy Discussion Paper #1314, Birkbeck College.

Owen, A. L., & Yu, B. Y. (2007). Regional differences in wage inequality across industries in China. *Applied Economics Letters, 15*(2), 113-116.

Parish, W. L., & Busse, S. (2000). Gender and Work. In W. Tang & W. L. Parish (Eds.), *Chinese Urban Life under Reform* (pp. 209-231). New York: Cambridge University Press.

Park, A., Song, X., Zhang, J., & Zhao, Y. (2003). The Growth of Wage Inequality in Urban China, 1988 to 1999. Retrieved from http://siteresources.worldbank.org/INTPGI/Resources/13933_inequality_Yaohui_Zhao.pdf

Park, A., Song, X., Zhang, J., & Zhao, Y. (2008). Rising Returns to Skill, Labor Market Transition, and the Growth of Wage Inequality in China. Retrieved from www.ceauk.org.uk/2008-conference-papers/wageineq-Park.doc

Parks-Yancy, R. (2006). The Effects of Social Group Membership and Social Capital Resources on Careers. *Journal of Black Studies, 36*(4), 515-545.

Pedroni, P., & Yao, J. Y. (2005). Regional Income Divergence in China: Department of Economics, Williams College No.2005-03.

People's Daily. (1995, October 5). *People's Daily Overseas Edition,* p. 4.

People's Daily. (2004, December 3). Attracting Foreign Investment China's Long-standing Policy, *People's Daily*.

Perry, E. J., & Selden, M. (2010). *Chinese Society: Change, Conflict and Resistance* (3rd ed.). Abingdon: Routledge.

Petersen, T., Saporta, I., & Seidel, M. L. (2000). Offering a Job: Meritocracy and Social Networks. *American Journal of Sociology, 106*, 763-816.

Petersen, T., Snartland, V., & Milgrom, E. M. M. (2005). Are Female Workers Less Productive than Male Workers? Productivity and the Gender Wage Gap, October 12, 2009, from http://www.stanford.edu/group/siepr/cgi-bin/siepr/?q=system/files/shared/pubs/papers/pdf/05-21.pdf

Phelps, E. S. (1972). The statistical Theory of Racism and Sexism. *American Economic Review, 62*(4), 659-661.

Polachek, S. W. (1975). Potential Biases in Measuring Male-Female Discrimination. *Journal of Human Resources, 10*(2), 205-229.

Polachek, S. W. (1981). Occupational Self-Selection: A Human Capital Approach to Sex Differences in Occupational Structure. *Review of Economics and Statistics, 63*, 60-69.

Polachek, S. W. (1985). Occupational Segregation: A Defence of Human Capital Predictions. *Journal of Human Resources, 20*(3), 437-440.

Polachek, S. W. (2004). How the Human Capital Model Explains Why the Gender Wage Gap Narrowed: Institute for the Study of Labor (IZA).

Pollak, R. A. (1994). For Better or Worse: The Roles of Power in Models of Distribution within Marriage. *American Economic Association, 84*(2), 148-152.

Pollak, R. A. (2005). Bargaining Power in Marriage: Earnings, Wage Rates and Household Production: NBER Program: NBER Working Paper No. 11239.

Porter, M. (1990). *The Competitive Advantage of Nations*. New York: The Free Press.

Psacharopoulos, G. (1994). Returns to Investment in Education: A Global Update. *World Development, 22*(9), 1325-1343.

Putnam, R. D. (2001). *Bowling Alone, Collapse and Revival of American Community*. New York: Simon & Schuster.

Qiu, T., & Hudson, J. (2010). Private Returns to Education in Urban China. *Economic Change Restructuring, 43*, 131-150.

Qu, Z., & Zhao, Z. (2008). Urban-Rural Consumption Inequality in China From 1988 to 2002: Evidence From Quantile Regression Decomposition: The Institute for The Study of Labour (IZA).

Raiser, M. (1998). Subsidising Inequality: Economic Reforms, Fiscal Transfers and Convergence across Chinese Provinces. *Journal of Development Studies, 34*(3), 1-26.

Richardson, H. W. (1973). *The Economics of Urban Size*. Westmead: Saxon House.

Rofel, L. (1999). *Other Modernities: Gendered Yearnings in China after Socialism*. Berkeley: University of Galifornia Press.

Romer, P. M. (1986). Increasing Returns and Long Run Growth. *Journal of Political Economy, 94*(1002-1037).

Rosenthal, E. (1998, October 13). In China, 35+ and Female = Unemployment, *The New York Times*.

Rosenzweig, M. R., & Zhang, J. (2009). Do Population Control Policies Induce More Human Capital Investment? Twins, Brith Weight and China's "One-Child" Policy. *Review of Economic Studies, 76*(3), 1149-1174.

Royalty, A. B. (1998). Job-to-Job and Job-to-Nonemployment Runover by Gender and Education Level. *Journal of Labour Economics, 16*(2), 392-443.

Schilt, K., & Wiswall, M. (2008). Before and After: Gender Transitions, Human Capital, and Workplace Experiences. *The B.E. Journal of Economic Analysis and Policy, 8*(1).

Schultz, T., & Paul, Y. Z. (1995). Fertility of Rural China. Effects of Local Family Planning and Health Programs. *Journal of Population Economics, 8*(4), 329-350.

Scott, J. (2002). Social Class and Stratification in Late Modernity. *Acts Sociological, 45*(1), 23-35.

Segal, D. (1976). Are there Returns to Scale in City Size. *The Review of Economics and Statistics, 58*(3), 339-350.

Seguino, S., & Grown, C. (2006). Gender Equity and Globalization: Macroeconomic Policy for Developing Countries. *Journal of International Development, 18*(8), 1081-1104.

Sen, A. (1999). *Development as Freedom*. New York: Alfred A. Knopf.

Shu, X. (2005). Market Transition and Gender Segregation in Urban China. *Social Science Quarterly, 86*, 1299-1323.

Shu, X., & Bian, Y. (2002). Intercity Variation in Gender Inequalities in China: Analysis of a 1995 National Survey. *The Future of Market Transition, 19*, 269-309.

Shu, X., & Bian, Y. (2003). Market Transition and Gender Gap in Earnings in Urban China. *Social Forces, 81*(4), 1107-1145.

Shu, X., Zhu, Y., & Zhang, Z. (2007). Global Economy and Gender Inequalities: The Case of the Urban Chinese Labor Market. *Social Science Quarterly, 88*(5), 1307-1332.

Sicherman, N. (1996). gender Differences in Departures from a Large Firm. *Industrial and Labour Relations Review, 49*(3), 484-505.

Simpson, P. A., & Stroh, L. K. (2002). Revisiting Gender Variation in Training. *Feminist Economics, 8*, 21-53.

Smith, A. (1776). *The Wealth of Nations*. London: W. Strahan and T. Cadell.

Solinger, D. J. (2006). The Creation of a New Underclass in China and its Implications. *Environment and Urbanization, 18*(1), 177-193.

Song, S. (2003). Policy Issues of China's Urban Unemployment. *Contemporary Economic Policy, 21*(2), 258-269.

Song, Y. (2007). Does Gender Make a Difference? Career Mobility in Urban China. *China Economic Quarterly, 6*(2), 629-654.

Soroka, L. A. (1983). Wage Rates, Region and City Size: An Occupation-Specific Approach. *The Cannadian Journal of Regional Science, 2*, 231-249.

Spence, M. (1973). Job Market Signalling. *Quarterly Journal of Economics, 87*(3), 355-374.

Spitze, G., & South, S. J. (1985). Women's Employment, Time Expenditure, and Divorce. *Journal of Family Issues, 6*(3), 307-329.

Summerfield, G. (1994). Economic Reform and the Employment of Chinese Women. *Journal of Economic Issues, 28*(3), 715-732.

Sveikauskas, L. (1975). The Productivity of Cities *Quarterly Journal of Economics, 89*(3), 393-413.

Tan, S. (1994). Social Transformation and Women's Employment in China. In T. N. U. Centre for Women's Studies (Ed.), *Chinese Women and Development: Status, Health and Employment: Collection of Essays from Summer School of Tianjin Normal University 1993* (pp. 337-371). Zhengzhou, China: Henan People's Publishing House.

The Labour Law of People's Republic of China (1994).

The World Bank. (1997). China Regional Disparities: World Bank Report No. 14496-CHA.

The World Bank. (2001). *Engendering development: Through gender equality in rights, resources, and voice*. New York: Oxford University Press.

The World Health Organization. (2009). Gender or women's health: why should WHO work on this? Retrieved February 12, 2010, from http://www.who.int/gender/about/gender_or_womens_health/en/index.html

Thurow, L. (1975). *Generating Inequality*. New York: Basic Books.

Trice, A. D., & Rush, K. (1995). Sex-Stereotyping in Four-Year-Olds' Occupational Aspirations. *Perceptual and Motor Skills, 81*, 701-702.

Tsui, M., & Rich, L. (2002). The Only Child and Educational Opportunity for Girls in Urban China. *Gender and Society, 16*(1), 74-92.

UNdata. (n.d.). Labour Force Participation Rate. http://data.un.org/Data.aspx?q=participation&d=GenderStat&f=inID%3a106

United Nations Population Division. (2009). World Marriage Data 2008. http://www.un.org/esa/population/publications/WMD2008/Main.html

Veum, J. R. (1993). Training Among Young Adults: Who, What Kind, and For How Long. *Monthly Labour Review, August*, 27-32.

Walder, A. G. (1986). *Communist Neo-Traditionalism: Work and Authority in Chinese Industry*. Berkeley: University of California Press.

Waldfogel, J. (1997a). The Effect of Children on Women's Wage. *American Sociological Review, 62*(2), 209-217.

Waldfogel, J. (1997b). Working Mothers Then and Now: A Cross Cohort Analysis of the Effects of Maternity Leave on Women's Pay. In F. D. Blau & R. Ehrenberg (Eds.), *Gender and Family Issues in the Workplace* (pp. 92-126). New York: Russell Sage Foundation.

Wang, J. (2001). *Innovative Space: Enterprise Clusters and Regional Development (in Chinese)*. Beijing: Peking University Press.

Wang, J., & Mei, L. (2009). Dynamics of Labour-intensive Cluster in China: Relying on Low Labour Costs or Cultivating Innovation. Geneva: International Institute for Labour Studies.

Wang, M., & Cai, F. (2008). Gender Earnings Differential in Urban China. *Review of Development Economics, 12*(2), 442-454.

Weagley, R. O., Chan, M.-L., & Yan, J. (2007). Married Couples' Time Allocation Decisions and Marital Stability. *Journal of Family and Economic Issues, 28*, 507-525.

Wheaton, W. C., & Lewis, M. (2002). Urban Wages and Labour Market Agglomeration. *Journal of Urban Economics, 51*(3), 542-562.

White, R. W., & Althauser, R. P. (1984). ILM's Promotions, and Worker Skill: An Indirect Test of Skill ILM's. *Social Science Research, 13*, 383-392.

Whyte, M. (1984). Sexual Inequality Under Socialism: The Chinese Case in Perspective. In J. L. Watson (Ed.), *Class and Social Stratification in Post-Revolutionary China*. Cambridge: Cambridge University Press.

Winship, C., & Mare, R. (1992). Models for Sample Selection Bias. *Annual Review of Sociology, 18*, 327-350.

Winter-Ebmer, R., & Sweimuller, J. (1992). Occupational Segregation and Career Advancement. *Economics Letters, 39*, 229-234.

Wu, Y. (1993). Productivity Efficiency in Chinese Industry, a Review. *Asia-Pacific Economic Literature, 7*(2), 58-66.

Wu, Y. (1995). Total Factor Productivity Growth, Technological Progress and Technical Efficiency change in China: A Three Sector Analysis. *Journal of Comparative Economics, 21*(2), 207-229.

Wu, Z. (2001). Zhongguo jingji zhuanxingqi: nvxing mianlin de tiaozhan yu duice [Challenges and Strategies to Chinese Women during China's Economic Transformations]. In Q. Li, W. Qu, J. Li & L. Zhu (Eds.), *Women's Development in Half of the century*. Beijing: Contemporary China Press.

Xu, L. C., & Zou, H.-f. (2000). Explaining the Changes of Income Distribution in China. *China Economic Review, 11*, 149-170.

Yan, Y. (1996). *The Flow of Gifts: Reciprocity and Social Networks in a Chinese Village*. Palo Alto, California: Stanford University Press.

Yang, G. (1999). Facing Unemployment: Urban Layoffs and the Way Out in Post-Reform China (1993-1999): An Empirical and Theoretical Analysis. The Hague: Working Paper Series 30, Institute of Social Studies.

Yang, M. M. (1994). *Gifts, Favours, and Banquets*. Ithaca, NY: Cornell University Press.

Ye, H. (2008). Earnings Returns to Tertiary Education and Gender Earnings Gap in Urban China, 1988-2005. Retrieved from http://soc.haifa.ac.il/~haifa2010/wp-content/uploads/Hua_YE1.pdf

Yoder, J. D. (1991). Rethinking Tokenism: Looking beyond Numbers. *Gender and Society, 5*(2), 178-192.

Young, A. (2000). The Razor's Edge: Distortions and Incremental Reform in the People's Republic of China. *Quarterly Journal of Economics, 115*(4), 1091-1135.

Yu, M. Y., & Sarri, R. (1997). Women's health status and gender inequality in China. *Social Science & Medicine, 45*(12), 1885-1898.

Zhang, J., Zhao, Y., Park, P., & Song, X. (2005). Economic Returns to Schooling in Urban China, 1988 to 2001. *Journal of Comparative Economics, 33*(4), 730-752.

Zhang, X. (2007). The Impact of Industry Agglomeration on Regional Innovation Performance: An Empirical Study on Electro communication Manufacture Industry In China Retrieved 29 June, 2011, from http://www.hbzyw.gov.cn/xwxx.asp?id=4214

Zhang, Y., Hannum, E., & Wang, M. (2008). Gender-Based Employment and Income Differences in Urban China: Considering the Contributions of Marriage and Parenthood. *Social Forces, 86*(4), 1529-1556.

Zhang, Z., Liu, A., & Yao, S. (2001). Convergence of China's Regional Incomes: 1952-1997. *China Economic Review, 12*(2-3), 243-258.

Zhou, X. (2000). Economic Transformation and Income Inequality in Urban China: Evidence from Panel Data. *American Journal of Sociology, 105*, 1135-1174.

Zhou, X., Tuma, N. B., & Moen, P. (1996). Stratification Dynamics Under State Socialism: The Case of Urban China, 1949-93. *Social Forces, 74*, 759-796.

Zuo, J. (2003). From Revolutionary Comrades to Gendered Partners. *Journal of Family Issues, 24*(3), 314-333.