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Abstract

Employing the household survey data of Guangdong province (FSST) in 2000, this paper is motivated by probing some answers to the following issues: (1) is the human capital approach useful in explaining earning variations of urban residents? (2) did wage discrimination occur because of individual's religion belief, sex or birth place? and (3) are there statistical differentials in the structure of earning determination among various groups of workers?

Our major conclusion can be summarized as follows: (1) Although education has a significantly positive effect on wage rate in almost all sectors of the labor market, the familiar inverted U-shaped age earning profile is confirmed only in the public nonprofit sector. (2) Wage discrimination by sex or origin place is not very significant in the case of Guangdong province. (3) Chow tests shows that the structures of earning function of various sectors differ from each other significantly.

Our paper contributes to the literature study of earning gap in urban China in the following perspective: (1) employing sector choice as an endogenous variable. Ownership category is found to be an important determinant of earning, but most Chinese study has arbitrarily taken it as an exogenous variable. (2) by investigating the wage determination equation by sectors, this paper draws a brand-new and accurate picture about the generality of human capital approach and existence of sex or immigrants discrimination problem in urban China.

1. INTRODUCTION

Since the start of economic reforms in 1978, China has experienced one of the largest expanding of households' earning gap in the world. According to the estimation of World bank (1997), China's Gini coefficient for the distribution of household income per capita increased from 28.2 in 1981 to 38.8 in 1995. Similarly, Khan etal (1999) reported that between 1988 and 1995 the Gini coefficient increased from 0.233 to 0.332 in urban China. Understanding the sources of this difference is critical to a determination of what policies, if any, might be needed to address the gap in pay.

We know that two important and measurable factors that influence earnings are education and experience. In a fully competitive society, wage should be set equal to the marginal productivity of the wage earners, which primarily depends on their education levels and working experience. Other characteristics such as age, tenure with current employers, hours of work, firm size, region, intensity of work effort, industry and the job's duties, location, and working conditions could also be relevant to the determination of earnings (Oaxaca and Ransom, 1994). Additionally, wage discrimination may also occur because of some individual's religion belief, sex or birth place.

However, these above index may not be enough to explain the earnings differentials in many developing countries such as China where labor market could be segmented into several different sectors by the *ownership* or *location* of the employers. Firstly, there is likely some earnings gap between wage earners of different ownership sectors even given their productivity are the same because the institutional or regulatory influences on public sector and private sector are generally different. Is there a substantial wage premium exists for public employees such as in Tanzannia (Lindauer and Sabot , 1983) or adversely a small bonus in the private sector like in Chili (Corbo and Stelcner, 1983) or there is actually no dominance of public wage offers over private ones such as in Cote d'Ivoire (Gagg and Vijverberg, 1988)? Secondly, wage earners in poor districts (e.g. Meizhou) tend to be underpaid relative to those with the same productivity in prospered districts such as Shenzhen while the opportunity for moving is still very limited because of the register (Hukou) system in urban China. More particularly, the relationship between earnings and human capital endowments could show different pattern among employees in various sectors.

To be mentioned, when estimating the wage equation, we employ the variable of being in one sector or not as endogenous variable. Most preceded studies neglected the

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endogeneity of being in one sector or other and simply estimate wage differentials by using one or more dummy variable to indicate the sectors where the individual is employed, or by estimating separate wage equations for each sectors. These methods are straightforward and appropriate when the working sub-sample is chosen randomly from the population. However, when labor market is segmented in sectors that given different rewards for human capital, one of these sectors which be preferred by most workers, the decision to work in which sector is no longer random and consequently the working and nonworking samples potentially have different characteristics. Sample selection bias arises when some component of the work decision is relevant to the wage determining process. In this case, controlling for the observable characteristics such as years of schooling and experience when explaining wages is insufficient, as some additional process is influencing the wage, namely, the process determining whether an individual works in a specific sector or not. On the other hands, we regard the location of employer (residence of worker in another sense) as exogenous variable considering its rigidity because that (1) residence of urban Chinese citizen is largely determined by the birth place or relative connections of individual, and (2) moving cost is relatively high.

Employing the data of a provincial household survey in 2000, this study will attempt to assess the generalities of human capital theory to the labor market context of Urban Guangdong Province, China. In short, three specific questions are considered – (1) is the human capital approach useful in explaining variations in earning? (2) did wage discrimination occur because of some individual's religion belief, sex or birth place? And (3) are there statistical differences in the structure of earning determination among various groups of workers?

2. MODELS FOR WAGE DETERMINATION

2-1 Model and Data

Wage of individual in each sector is settled in two steps: first, an individual will determine which sector to work for; second, his wage is determined by the characteristics of himself and the employer such as education, age, job duties, hours to work, intensity of work effort, region, firm size. The wage rate[1] of individual i (ω_i)

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[1] We employ natural logarithm of wage rate instead of that of monthly earning as the dependent variable because wage rate is relatively appropriately specified. The using of earnings as dependent variable can result in biased estimates of the parameters of the earning function. The direction and

in a specific sector is determined in the following process:

$$\ln \omega_i = \beta_0 + \beta_1 EDU_i + \beta_2 AGE_i + \beta_3 AGE_i^2 + X_i'\delta + \varepsilon_i \qquad (1)$$

$$d_i^* = Z_i'\gamma + v_i \qquad (2)$$

$d_i = 1$ if the individual works in a specific sector ($d_i^* > 0$)   ;

$d_i = 0$ otherwise

Eq. (1) is the mincerian wage equation which is our primary interest and eq.(2) is the reduced from for the latent variable capturing sample selection. EDU is years of schooling, X is a vector of exogenous wage determining variables that include human capital variables (occupation, job duties, intensity of work effort) and wage discrimination variables (gender, religion belief, birthplace, language and residing years). I allow Z to contain all of the explanatory variables in equation (1) plus four exogenous variables that could affect the choice of sectors: self reported value of social connection power, medical care are subsidy dummy, times of average job change and coverage of enterprise social security system. δ and γ are vectors of unknown parameters; ε_i and v_i are zero mean error terms with $E[\varepsilon_i \mid v_i] \neq 0$.

Data employed in this study stem from "The Fundamental Survey of the Social Transition in Guangdong Province" (FSST) which collected information on 2003 households in 2000 and is designed to be a panel data thereafter. Details on this provincial survey, however, can be found in Appendix I. This survey collected information on 1,486 individuals who reported a wage earning activity as their main job at the time of the interview. 41.9% of these working respondents are working for profit-oriented public sectors, 33.8% for public nonprofit sectors, 2.5% for foreign invested companies and 23.2% for other domestic private companies. Samples from public sector are a little bit over-represented while those from foreign invested companies are somewhat under-represented[2].

2-2 Estimation Method of the Mincerian Wage Equation

It is well known that ordinary least squares (OLS) estimation of β and δ over the sample corresponding to $d_i = 1$ will generally lead to inconsistent estimates due to

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magnitude of the bias will depend on labor supply response to wage rate (Blender, 1973).

[2] By the end of 1999, working population in urban areas of Guangdong Province amounted to 1.0959 million, while 52.3% of them work in the public sectors, 27.6% work in domestic private enterprise or work as self employed, 20.2% work in other ownership sectors most of which are foreign invested enterprises.

the correlation between the explanatory variables and error term of equation (1) through the relationship between ε_i and v_i. A number of remedies, however, exist. Since Heckman (1974)'s seminal work on sample selection bias, the economics literature about this topic has been greatly expanded (Vella, 1998). Here we employ the method of parametric two-step estimation (2SE)[3].

Parametric 2SE involves estimating eq.(2) by probit and then computing the corresponding Probit residual. More particularly, firstly we estimate the following sector selection process (Eq. 2) by probit:

$$d_i^* = Z_i'\gamma + v_i$$

where $\hat{v}_i$ is the estimated residual and is employed as an explanatory variable in the second process wage determination function:

$$\ln \omega_i = \beta_0 + \beta_1 EDU_i + \beta_2 AGE_i + \beta_3 AGE_i^2 + X_i'\delta + \mu\hat{v}_i + \eta_i \qquad (3)$$

where η_i is the error term denoting a zero mean and is uncorrelated with the regressors. $\hat{v}_i$ is the Probit generalized residual and known as the inverse of Mill's ration (λ) which has the form as follows:

$$d_i * \frac{\sigma_{\varepsilon v}}{\sigma^2_v}[\frac{\phi(Z_i'\hat{\gamma})}{\varphi(Z_i'\hat{\gamma})}] + (1 - d_i)[\frac{-\phi(Z_i'\hat{\gamma})}{1 - \varphi(Z_i'\hat{\gamma})}]$$

where $\phi(.)$ and $\varphi(.)$ denote the probability density and cumulative distribution functions of the standard normal distribution. $\sigma_{\varepsilon v}$ is the covariance of equations (1) and (2), σ^2_v is the standard deviation of equation (2). Inverse of Mills ratio (λ) possesses two important characteristics: first, it has mean zero over the whole sample; second, it is uncorrelated with the variables that appear as explanatory variable in the first step Probit model. The parametric two-step estimation is quite simple and generates consistent and efficient estimators(Nelson, 1984).

3. EMPIRICAL RESULTS

3-1 Labor Income and Total Earnings Differentials

Graph1 reveals that the average labor income of urban employees in whatever sector

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[3] An alternative method is Full Information Maximum Likelihood Estimation (FIML) which depend on the normality assumption of error terms and its computation is relatively complicated. See J.V.Gagg and W.Vijvergerg(1988) for an application.

increased considerably since 1985. However, simultaneously with the increase in prosperity, the inter-sector earning gap has also been enlarged significantly. In particular, the earning gap between state owned and private manufacturing has been noticeable widened.   Income level between government agencies (public nonprofit sector) and stated owned manufacturing (public profit oriented sector) does not differ much with each other until 1995.   The relatively big promotion of income for government agency employees since 1995 was resulted partly for the public policy of employing attractive salary as an instrument to prevent prevailing corruption among civil servants.

Table 1-1 Average Yearly Labor Income by Occupation and Type of Employer (unit=Yuan)

Occupation	Public 1	Public 2	Foreign	Domestic
(1) White Collar				
Cadre of Communist Party	19,574	17,446		
Managerial	19,500	20,256	30,857	57,692
Mass Median Related Job	20,325	17,900		19,200
(2) Blue Collar				
Craftsman (Skilled)	17,903	19,032	9,600	18,385
Machine Operator	10,711	7,707	3,000	16,892
Business Operator	22,892	9,478	12,800	18,096
Clerks	38,400	19,200	26,400	19,440
(3) Others	16,079	8,959	13,817	19,684
(4) All Occupations	19,035	12,870	18,813	20,986

Note: Public1=Public Nonprofit Sector; Public2= Public Profit Oriented Sector

Foreign=Foreign Invested Sector; Domestic=Domestic Private Sector

Table1-1 indicates that there exists big inter-sector wage differential even for the same occupations. For example, managerial is more than 150% better salaried in domestic private sector than those in public sectors, while clerks in public nonprofit sector receive two times payment of their counterparts in domestic private sector. Craftsman and machine operator is worst paid in foreign invested sector, while cadre of communist party is worse salaried in profit oriented sector than those in nonprofit sector.   Taking into account of working hours and comparing the wage rate among individuals in different sector will present us a little what different picture because the working time of employees in public sectors is generally 5-10% less.

While for the intra-sector labor income inequality, we could easily learn from the Lorenz Curve (graph 2) that the degree of inequality is quite noticeable. The Gini Coefficient for the distribution of labor income per capita equals to 0.3479 (full samples), which is about the same level with those of the national base. More than 30% aggregate labor income are enjoyed by the 7% wealthiest population, and the poorest 25% population shared less than 5% aggregate labor income. Graphs 3-1, 3-2, 3-3 and 3-4 depicture the income inequality within four segmented sectors: public[4] nonprofit sector, public profit oriented sector, foreign invested sector and other domestic private sectors including the self-employed.[5] Within the Public nonprofit oriented sector, the top 5% population enjoys about 20% of aggregate income, the poorest 30% population share less than 13% aggregated income. Within the public profit oriented sector, the top 9% population enjoys more than 30% of the aggregate income, while the poorest 30% population share about 10% aggregate income only. Income is most diversified in the domestic private sector: the top 2% persons occupy about 20% of aggregate income, the poorest 50% persons shares less than 15% of the aggregate income.

To be emphasized, those above income for employment is only one part of total earnings. Taking into account of those non-wage benefits of housing, medical treatment, pension, and food, the earning inequality inter or intra sectors could be even bigger. Table 1-2 presents results on the distribution of these non-wage benefits which suggest that fringe benefits are generally more prevalent in the public sectors[6].

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[4] Here public sectors include state owned units and collective owned units as well.

[5] Although there exists some disparities about the division approach of China' labor market, this four dimension segmentation is most popular. Public profit oriented sectors used to be a charming labor market with good job security and high income, but most of them have slipped into management failure, bad working condition and wretched payment since the 1980s. Foreign invested sectors are well known to provide high salaries but little job security and social security insurance. Domestic private company employees, self-employed and liberal professions are working in overwhelmingly diversified labor markets. Although somewhat hesitated, we merge them into the same category for convenience— domestic private sector.

[6] A similar finding was confirmed in the case of Tanzania (Lindauer and Sabot ,1983).

Table 1-2 Non-wage Benefits by Type of Employer

Benfit	Percent of Workers receiving benefit			
	Public 1	Public 2	Foreign	Domestic
Company housing	8.28	11.2	13.51	8.48
Housing Purchase Stipend	62.02	46.6	43.24	22.2
Medical insurance	78.69	62.21	51.35	13.6
Pension and unemployment insurance	82.93	72.97	66.67	24.69

Table 2 presents the mean value for worker in the above two public sectors, foreign invested sector and domestic private sector of the dependent and independent variables included in the Mincerian wage functions.

If human capital investment is the sole determinant for wage rate, wage rate should be proportional to the years of schooling, age or level of duty etc. As we can tell from table 2, human capital investment could be critical for getting an employment chance in the public nonprofit organizations because their employees reported a top background in education as well as in professional skills. For employees of the profit-oriented public companies, however, their wage rate is the lowest in spite of their relatively long social experience.

We finally look at the effects of gender, religion, language, birthplace and residence span on earning to probe the existence of wage discrimination. First, we could find no evidence of gender discrimination in sector selection process because the share of female employees is surprisingly well balanced in all sectors (male employees account for 52%, 47%, 49% and 54% of all staffs in public nonprofit organization, in public profit oriented companies, foreign invested companies and in other domestic private companies respectively). Secondly, although it is hypothesized that the local-bred, Cantonese dialect speaker, and long spanned residents are relatively privileged, we saw no supportive proofs for these hypotheses.

However, all of the above descriptive finding could be misleading because we discussed the impact of one variable without excluding the indirect effect of other variables. Accordingly, we still need to perform some scientific estimation before drawing some reliable conclusions.

3-2 Sector Choice Process

Table 3 reveals the sector selection structure. The provision of medical care, pension and unemployment insurance do significantly affect the sector choice, especially for the choice of public sector. However, the self-evaluated social connection capability (Kone) is not statistically significant except in the case of domestic private sector.

Employing the estimated residual $\hat{v}_i$ of the above sector selection estimations as an explanatory variable (inverse of mill's ratio) in the estimation of wage determination equation, we are informed by table 4 that the sector choice results significantly affect the wage rate of employees in public nonprofit and foreign invested sectors.

3-2 Wage Determination Process

Table 4 presents wage function for the sample of different sectors respectively, containing all possible independent variances and the natural logarithm of the wage rate of household head as the dependent variable.

A.AGE

We examine each explanatory variable in turn, starting with age. In almost all economies a strong relationship is found between earnings and length of employment experience of its proxy, age. Without investigating separately by the ownership of employers, Knight and Lina (1991) found that age had an important influence on wages and the familiar inverted U-shaped curve was indeed in urban China: income rises monotonically from the age group 21-25 to a peak at age 51-55 and thereafter declines monotonically.

Estimating the earning function by the ownership of employer, we found that inverted U-shaped curve between age and wage rate could only be found in the pubic profited oriented sector: wage rate rises significantly with age and reach its peak at age 43.8 and thereafter declines gradually. Most research on this wage-seniority relationship has stressed explanations in terms of human capital[7] or "internal labor market"[8]. However, Friedman (1985) argues that institutions for distributing income are sensitive to age in China: the old have power in China and the principle of favoring seniority is

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[7] The familiar inverted U-shaped curve is interpreted as representing human capital formation on the job: earnings rise as skills are acquired and payment for training falls, and eventually decline as skills are lost or become obsolete.

[8] Internal labor market theory assumes that firms, intent on recouping their investments in firm-specific training, attempt to tie employees into the firm by means of seniority payments.

firmly established since the establishment of Communist China in 1949. We believe that it worth a detailed discussion in the future about which explanation is the most powerful.

B. Education

There is a powerful relationship correlation between years of education and labor income in almost all countries. Is China exceptional? According to a survey of 3,000 workers conducted in 1982 (He, 1982), although the mean basic wage of those with higher education somewhat exceeded that of those with middle or primary education in every age group, in their mean total income the brain workers fared less than the physical workers at all ages below 50.

However, in our study we found that the high-educated persons significantly receive more salaries than those low education give other personal characteristics equal. For instance, 1 year more education leads to 3.4% up of wage rate in public nonprofit sector, 4.7% in public profit oriented sector and 8.7% in domestic private sector. It might be hypothesized the education will be rewarded more by private sector employers than the public employers. Our results could reflect the more and more critical role of education in determining labor payment after the economy reform.

The effect of other factors of human capital endowment such as duty level of the job or the intensity of job effort[9] are very minor except that workers of public profit oriented sector are significantly encouragingly paid for their job effort.

C. Sex

Besides human capital resources, many other personal characteristics of individuals are found to be responsible for the discrimination of their wage rate. One of the noticeable factors is sex. A lot of empirical research has focused mainly on wage discrimination with regard to female. For example, Petersen and Morgan (1995) investigated the within-job wage differences between men and women in the same occupation and establishment and found that within-job wage discrimination by sex was much less important than occupation-establishment segregation for observed wage differences. Shackett and Trapani (1986) used a pooled micro data to examine the wage differentials by race and sex and found no significant differential by race or sex

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[9] Those who occasionally take job home are regarded as worker with high intensity of job effort.

except for black women in nonprofit industries. On the contrary, Strauss and Horvath (1976) suggests that women in America suffer from unequal pay for equal work, and blacks earn less than whites in average weekly earnings about 40% of the time in 1960 and 30% time in 1970. In a study of Chinese labor market, Knight and Song (1991) found that women are paid significantly less than men.

As we can easily tell from table 5, although women and men are not equally represented in various occupations, women are not necessarily dominantly employed in the low-paying jobs like we found in most developed countries. In the case of China, women are fully represented in some higher-paying jobs such as clerks and managerial.

Estimation result of table 4 indicates that the effect of gender on wage rate is limited only in the public profit oriented sector. Male workers of public profit oriented sector are 22.4% better paid than their female counterparts. However, we should still be very cautious to interpret that sex discrimination exist in this sector because male worker of equal human capital endowment with their female counterparts could be more productive in jobs like machine operating where muscles and physical power are required.

Table 5   Segmentation of Occupation by gender   (unit: persons)

Occupation	Female	Male
(1) White Collar		
Cadre of Communist Party	70	139
Managerial	60	73
Mass Median Related Job	87	43
(2) Blue Collar		
Craftsman (Skilled)	51	95
Machine Operator	116	107
Business Operator	65	51
Clerks	60	22

D. Immigrants

Increase immigrants in urban China province has sparked a renewed interest in the relative earning of various ancestral groups in Guangdong province. One of the best criteria for distinguishing immigrants from natives is their fluency of dialect language. Therefore, we would like to test the proposition that if residents who can speak

Cantonese dialect earn higher hourly wage rate or not.

However, we found no significant effect of the birth place or language on the hourly wage rate of employees, although some other tests showed that residents who can speak standard Cantonese dialect[10] are relatively advantageous.

3-3 Structure of Wage Determination

We performed Chow test to verify the equality of sets of coefficients that we obtained from four different sectors. If the sets of coefficients do not vary significantly from each other, we say that there are no structural differences in wage determination mechanism from one sector to another, and vice versa. The formula for the "Chow test" of this constraint is:

$$F = \frac{[ESS_c - (ESS_1 + ESS_2)]/k}{(ESS_1 + ESS_2)/(n_1 + n_2 - 2k)}$$

ESS_1 and ESS_2 are the error sum of squares from the separate regressions, ESS_c is the error sum of squares from the pooled (constrained) regression, k is the number of estimated parameters ($k = 4$ in the case of reduced form of Wage equations in table3-1), and n_1 and n_2 are the number of observations in the two groups.

Chow tests shows that the sets of coefficients of four sectors differ from each other significantly. For instance, F test for the equality of coefficients for public nonprofits sector and those for the public profit oriented sector shows the null hypothesis of equality should be rejected. Similarly, Chow test for the equality of structure between public nonprofit sector and foreign invested sector or domestic private sectors also indicated that we can reject the null hypothesis of equal coefficients at the 1% level.

4. CONCLUDING REMARKS

Employing the household survey data of Guangdong province (FSST) in 2000, this paper is motivated by probing some answers to the following issues: (1) is the human capital approach useful in explaining variations in earning? (2) did wage discrimination occur because of some individual's religion belief, sex or birth place? And (3) are there statistical differences in the structure of earning determination among various groups

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[10] Native residents who can speak standard Cantonese dialect are mainly living in Guangzhou and Shenzhen.

of workers?

Our major conclusion can be summarized as follows: (1) Although education has a significantly positive effect on wage rate in almost all sectors of the labor market, the inverted U-shaped age earning profile is confirmed only in the public nonprofit sector. (2) Wage discrimination by sex or origin place is not very significant in the case of Guangdong province. Gender differentials in wage rate are limited to the public profit oriented sector. (3) Chow tests shows that the structures of earning function of the four sectors differ from each other significantly.

Our paper contributes to the literature study of earning gap in urban China in the following perspective: (1) employing sector choice as an endogenous variable. Ownership category is found to be an important determinant of earning, but most Chinese study has mistakenly took it as an exogenous variable. (2) by investigating the wage determination equation by sectors, this paper draws a brand-new and accurate picture about the generality of human capital approach and existence of sex or immigrants discrimination problem.

Some of our results – wage rigidity related to age or employment experience- indicate that the Chinese labor market is still very immature: employees luck the chance of obtaining marketable skills in their working unit and length of service with the firm does not lead to the improvement of productivity. In addition, education drives up wage rate to a moderate extent, but further premium for education should be encouraged in order to stimulate individuals' efforts in human capital accumulation.

Appendix I: DATA

This paper employed the data of "The Fundamental Survey of the Social Transition in Guangdong Province" (FSST). FSST is designed to be one of the first Chinese Household Panel data by Pr.Haixiong Qiu of the Guangdong Development Research Institute (Zhongshan Univesity). With the financial aid of Linnan Alumnus Association Fund in United States, FSST is to be carried out every two years in Guangdong province from 2000. FSST has a wide coverage of information about the family composition, residence, job, income, consumption, leisure, portfolio choice, social activities, medical and pension security, self-consciousness of social class, moral view and philosophy of life for each household.

Sampling Process

2003 households were randomly chosen from a pool of 20 million households[11] in Guangdong province. FSST achieved an unbelievable perfect rate of collection because of the powerful backup of the provincial government throughout the whole investigation process.

The sample is selected on the basis of a multiple-stage stratified sampling procedure[12]. In the first stage, 7 typical cities are randomly selected from the dimensions of economic scale, population and geographic distribution. These 7 cities are: Guangzhou, Shenzhen, Shantou, Dongguan, Zhanjian, Shaoguan and Meizhou. In the second stage, specific research groups visited the government of 7 cities with the formal introduction letters of Provincial government and randomly select one or two districts in each cities as research object. In the third stage, 1 to 5 typical neighborhoods are selected from each district. Fourthly, 1 to 6 typical committees are selected from each neighborhood. Finally, households are randomly selected from each neighborhood committee according to the resident registers. Substitutes for absent households are selected by propriety of left-right-upper-lower of the absent in the register.

Questionnaire respondents were selected from the household members scientifically by the standard of Kish Grid method. Expert investigators visited the home of samples and interviewed the respondents according to the unified questionnaire one by one. To

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[11] Population is reserved to the households with formal register, more than 1 year of residency in the present city, and the head aged between 18 and 65.
[12] The order of administrative level in China from the highest to the lowest is: Province (Sheng)– City (Shi)—District (Qu)—Neighborhood (Jie)—Neighborhood committees (Juwei).

test the reliability of the interview, 5% of the samples were randomly selected to be followed-up thereafter.

Demographic and Economic Situation of The Survey Areas

Guangdong province[13], a frontier for economic reform and foreign investment in main land China, has experienced an outstandingly development in the last 20 years. As a result, the living standard of Guangdong citizens ranks one of the highest in China. In 1999, the disposable income per capita of urban residents in Guangdong amounted third highest (9,126 RMB) in the whole country, which is only slightly lower than that of Shanghai (10,932 RMB) and Beijing (9,183 RMB). By the end of 1999, working population in urban areas of Guangdong Province amounted to 1.0959 million, while 52.3% of them work in the public sectors, 27.6%[14] work in domestic private enterprise or work as self employed, 20.2% work in other ownership sectors most of which are foreign invested enterprises. Registered unemployed rate of 1999 was as low as 2.3% in this province[15].

Population and income level inside the Guangdong province, however, are overwhelmingly diversified. As we can easily tell from Table A, Shenzhen is the highest educated, youngest, most urbanized, populated and wealthy city among the seven targeted areas: average schooling years of its respondents is 12.6; the average age of respondents is only 37.58; 92.46% of its population are urban residents; the density of its population is about 24 times of the least populated city, Shaoguan; the average income of its respondents is more than 4 times of that of the poorest city, Meizhou.

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[13] Statistics of this paragraph is stemmed from China Labor Statistical Yearbook 2000, pp, 13, 78, 86.
[14] This ratio is the second highest in China in 1999.
[15] The real unemployed, however, could be more than 10% in most urban areas because of the large number of latent unemployed in state owned enterprises (Zhou, 1998).

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Graph 1:Average Yearly Wage of Staff in China by Sectors
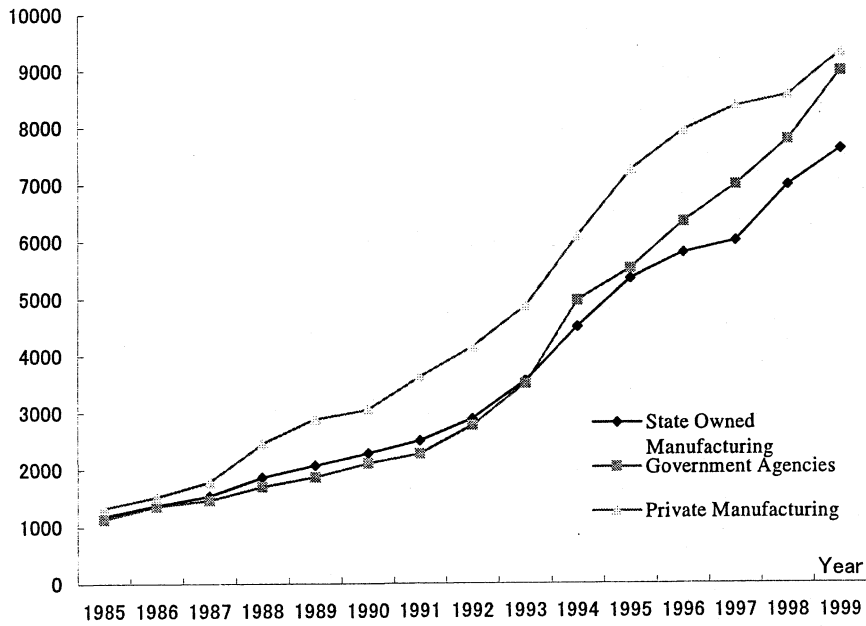
Source: China Labor Statistical Yearbook 2000, China Statistics Press, Pp39,49

Graph 2 Lorenz Curve for Per Capita Labor Income (Full sample)

Gini index=0.3479

Cummulative percentage of population
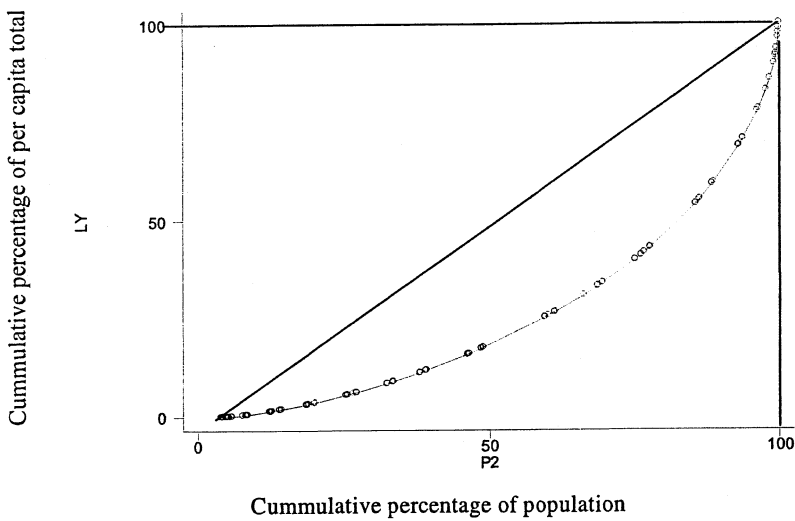
Cum. Per. Of Population	Cum. Per. Of Per Capital Labor Income
12.32	1.37
25.39	5.43
37.98	11.10
46.01	15.63
76.22	40.90
85.60	53.98
88.75	59.50
93.84	70.64
99.40	91.52
100.00	100.00

Graph 3-1 Lorenz Curve for Per Capita Labor Income (Public nonprofit Sector)

Cummulative percentage of population
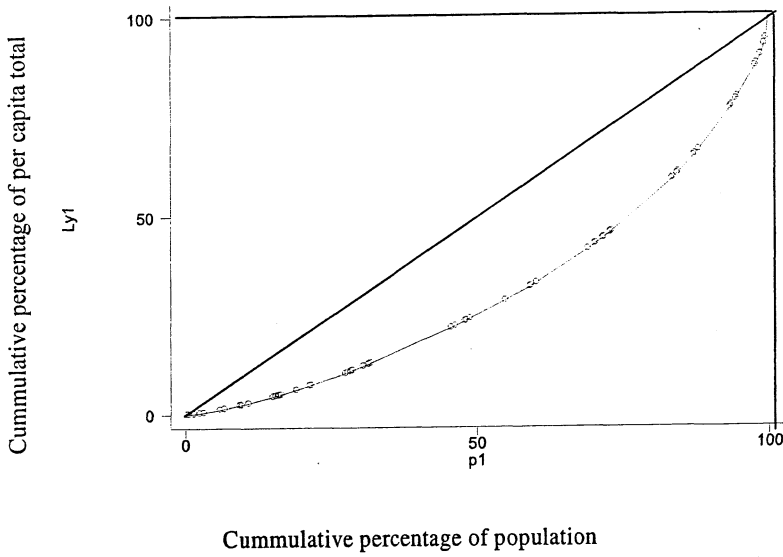
Of Population	Cum. Per. Of Per Capital Labor Income
16.44	4.97
27.31	10.27
31.71	12.80
45.60	21.64
59.03	31.97
68.98	41.40
83.33	58.92
87.96	66.23
94.68	79.43
99.31	92.63
100.00	100.00

Graph 3-2 Lorenz Curve for Per Capita Labor Income (Public profit oriented sector)

Cummulative percentage of population
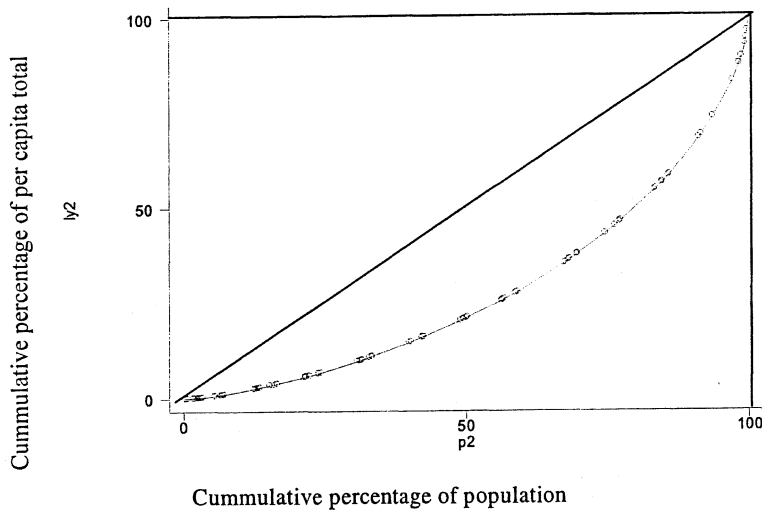
Of Population	Cum. Per. Of Per Capital Labor Income
21.27	5.57
31.49	10.09
42.13	15.93
49.69	20.75
59.10	27.82
67.28	35.27
74.64	43.06
83.23	54.41
91.21	68.23
100	100

Graph 3-3 Lorenz Curve for Per Capita Labor Income (Foreign Invested Sector)

Cummulative percentage of population
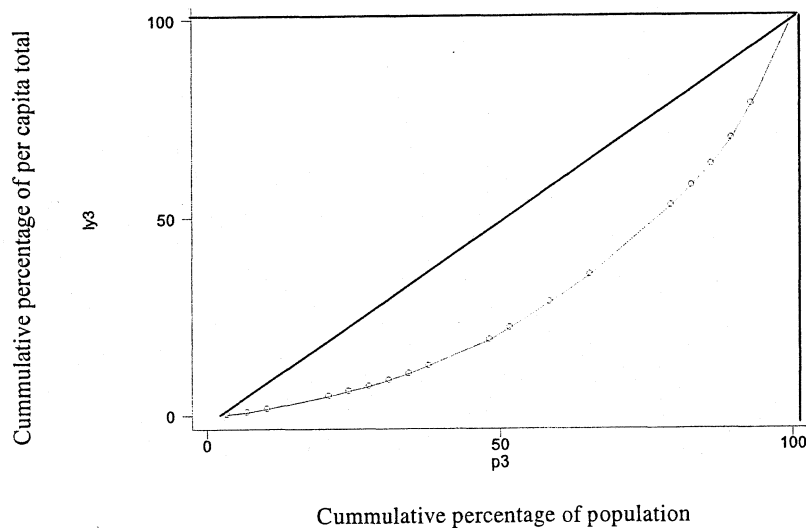
Of Population	Cum. Per. Of Per Capital Labor Income
10.34	1.62
20.69	4.87
34.48	10.55
58.62	28.53
65.52	35.46
79.31	52.78
82.76	57.76
89.66	69.68
93.10	78.34
100.00	100.00

Graph 3-4 Lorenz Curve for Per Capita Labor Income (Domestic Private Sector)

Cummulative percentage of population
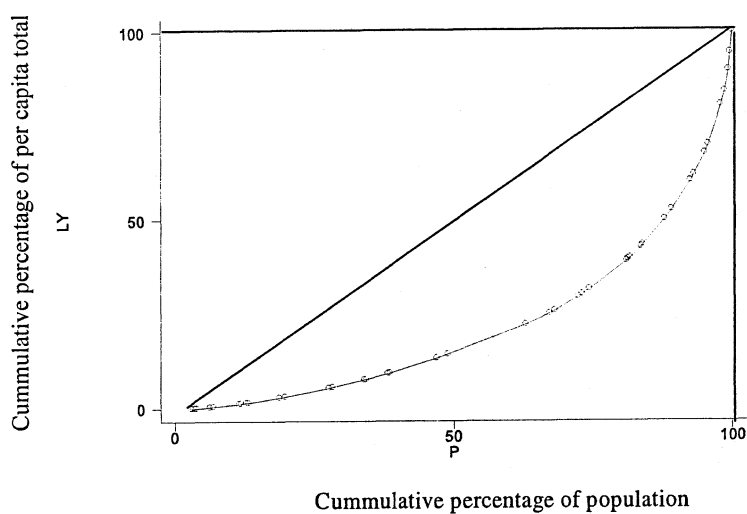
Of Population	Cum. Per. Of Per Capital Labor Income
11.51	1.23
27.63	5.35
47.04	13.24
68.09	25.82
73.03	30.13
80.92	39.00
87.83	49.97
92.43	60.13
95.72	69.72
98.03	80.25
100	100

Table 1-1 Average Labor Income by Type of Employer (unit=Yuan)

Occupation	Public 1	Public 2	Foreign	Domestic
(1) White Collar				
Cadre of Public Organization	19,574	17,446		
Managerial	19,500	20,256	30,857	57,692
Mass Median Related Job	20,325	17,900		19,200
(2) Blue Collar				
Craftman (Skilled)	17,903	19,032	9,600	18,385
Machine Operator	10,711	7,707	3,000	16,892
Business Operator	22,892	9,478	12,800	18,096
Clerks	38,400	19,200	26,400	19,440
(3) Others	16,079	8,959	13,817	19,684
(4) All Occupations	19,035	12,870	18,813	20,986

Table 2 Definitions and Descriptive Statistics of the Variables by Public and Private Sector Employment

Notation	Definition	Public Sector		Private Sector	
		Nonprofit N=496	Profit oriented N=608	Foreigned Invested N=37	Domestic Private & Self Employed & Liberal Profession N=345
LY	Monthly labor income (RMB)	1542.84	1042.15	1489.36	1654.64
workhour	Workhour per day	7.63	7.79	7.86	8.98
age	Age of respondent	41.38	45.44	34.05	37.26
EDUr	Years of schooling	13.06	10.63	13.05	10.71
duty1	level of duty : 1 if low; 0 otherwise	0.69	0.89	0.88	0.96
duty2	level of duty : 1 if middle; 0 otherwise	0.24	0.10	0.08	0.03
duty3	level of duty : 1 if high; 0 otherwise	0.07	0.01	0.04	0.01
Effort1	Intensity of work effort : 1 if low, 0 otherwise	0.51	0.24	0.42	0.21
Effort2	Intensity of work effort : 1 if High, 0 otherwise	0.34	0.43	0.47	0.41
Occup1	Occupation: 1 if Cadre of Communist Party, 0 otherwise	0.39	0.04	0.00	0.00
Occup2	Occupation: 1 if Managerial, 0 otherwise	0.02	0.25	0.03	0.04
Occup3	Occupation: 1 if Mass Median Related Job, 0 otherwise	0.21	0.04	0.00	0.01
Occup4	Occupation: 1 if Craftsman (Skilled), 0 otherwise	0.10	0.20	0.01	0.05
Occup5	Occupation: 1 if Machine Operator , 0 otherwise	0.06	0.47	0.00	0.04
Occup6	Occupation: 1 if Business Operator, 0 otherwise	0.03	0.16	0.01	0.09
Occup7	Occupation: 1 if Clerks, 1 otherwise	0.02	0.14	0.01	0.03
Occup8	Occupation: 1 if Others, 0 otherwise	0.16	0.47	0.05	0.74
FirmSize	Total number of labor employed	256.15	670.30	454.30	69.89
kone	Self evaluated social connection ability, 1 if strong, 0 if weak	0.32	0.23	0.43	0.32
gender	Gender dummy, 1 if male, 0 if female	0.52	0.47	0.49	0.54
religion	Religious belief, 1 if yes, 0 otherwise	0.15	0.24	0.25	0.20
birthplace	Birthplace dummy, 1 if inside Canton province	0.81	0.88	0.73	0.87
dialect	Canton dialect dummy, 1 if he can speak	0.80	0.88	0.76	0.85
sdialect	Standard Canton dialect dummy, 1 if he can speak	0.46	0.55	0.46	0.60
resperiod	Residence period in the city	28.11	34.53	22.95	26.06
health	Healthy dummy, 1 if healthy, 0 otherwise	0.96	0.93	1.00	0.98
medicare	Enterprise Medical care subsidy, 1 if any, 0 otherwise	0.79	0.62	0.51	0.14
jobchange	Times of job transferred (a proxy of job stability)	1.17	1.21	1.35	1.77
hoshodo	Extent of enterprise social security, 1 if fully secured	0.83	0.73	0.67	0.25

Table 3 Estimation of the Sector Selection Equation (Probit)

	Public 1		Public 2		Foreign		Domestic	
	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.
age	-0.0377967	0.0281	0.0674777**	0.0283	0.2083148	0.1410	-0.0446104	0.0383
age2	0.0003589	0.0003	-0.0005777*	0.0003	-0.003034	0.0019	0.0003298	0.0005
EDUr	0.0817736***	0.0188	-0.0573106***	0.0176	0.0656869	0.0561	-0.0533205**	0.0251
duty2	0.6322887***	0.1454	-0.5721962***	0.1472	-0.1125696	0.4975	-0.3136222	0.3030
duty3	0.6121991**	0.2750	-0.6129104**	0.2844			0.0960185	0.4612
Effort2	-0.1102112	0.0978	-0.0140973	0.0950	0.1664355	0.2539	0.1374826	0.1413
FirmSize	-0.000277***	0.0001	0.0003553***	0.0001	0.0000806	0.0001	-0.0005458**	0.0003
gender	-0.1138907	0.0967	-0.0520753	0.0944	-0.1640361	0.2551	0.346776**	0.1434
religion	-0.1502504	0.1300	0.1434292	0.1258	0.350569	0.3159	-0.0469214	0.1918
birthplace	-0.170912	0.1827	0.1222798	0.1780	-0.2901291	0.4648	0.1661527	0.2756
dialect	0.4403434	0.3331	-0.2279294	0.3334	0.3930448	1.2696	-0.6960241	0.5101
sdialect	-0.4493412	0.3113	0.2673767	0.3159	0.3323289	1.2345	0.5123392	0.4842
resperiod	-0.0008345	0.0041	0.0047924	0.0040	-0.0061854	0.0119	-0.0044655	0.0059
health	0.2340818	0.2537	-0.3523094	0.2493			0.5409453	0.5005
Kone	-0.0162572	0.1143	-0.1403917	0.1132	-0.3669949	0.3718	0.3687625**	0.1586
medicare	0.4763137***	0.1163	-0.0577042	0.1142	-0.4305744	0.2902	-0.7659718***	0.1700
jobchange	-0.0190525	0.0325	-0.0281892	0.0322	0.0606789	0.0847	0.0792649*	0.0433
hoshodo	0.3222147**	0.1280	0.2319731**	0.1227	0.3475359	0.3472	-0.8132714***	0.1618
city1-Shaoguan	0.113097	0.3746	-0.1051306	0.3760			-0.1051744	0.5748
city2-Guangzhou	-0.0666768	0.3451	0.0937273	0.3467	-0.3779672	1.2791	-0.4298351	0.5408
city3-Zhanjian	0.0893749	0.3704	-0.2523298	0.3696	-0.290281	1.3114	-0.1406319	0.5539
city4-Shenzhen	-0.0001204	0.3259	0.0319283	0.3276	-0.6273473	1.2739	-0.1548953	0.4980
city5-Dongguan	0.270119	0.3632	-0.3293841	0.3649	-0.3560813	1.3116	-0.148854	0.5524
city6-Shantou	-0.3380217*	0.1775	0.2783917	0.1706	-0.2409049	0.4477	-0.0298424	0.2750
Intercept	-0.8911857	0.7617	-1.141452	0.7527	-6.133563***	3.0250	1.105689	1.0796
Observations	870.00000		870		747		870	
Log likelihood	-490.06000		-516.49		-59.14		-218.81	

Note: (2) We employ the poorest city Meizhou as a benchmark of location. (2)* Statistically significant at 10% level; **Statistically significant at 5% level; ***Statistically significant at 1% level.

Table 4 Estimation of the Wage Determination Equation (Parametric 2SE)

	Public Nonprofit Sector		Public Profit Oriented Sec		Foreign Invested Sector		Domestic Priv. Sector	
	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.
age	0.0110775	0.0224	0.0556218**	0.0258	-0.0950774	0.3006	0.002776	0.0567
age2	-0.0001142	0.0003	-0.0006355**	0.0003	0.0014833	0.0043	-0.0003668	0.0007
EDUr	0.0337896*	0.0197	0.0474519**	0.0190	0.1559287	0.1346	0.0873074**	0.0388
duty2	0.0057311	0.1319	0.1384477	0.1643			-0.40785	0.6046
duty3	0.0814097	0.1462	0.3283699	0.2618			-0.151741	0.3459
Effort2	0.1004575	0.0813	0.1685055*	0.0889			-0.0002674	0.2178
FirmSize	0.0000269	0.0001	0.0000394	0.0000			0.0003777	0.0007
gender	0.0831977	0.0680	0.2242174***	0.0810			0.2329839	0.2512
religion	-0.1166295	0.1200	-0.2708301**	0.1330			-0.4374151	0.2758
birthplace	-0.0126987	0.0978	-0.1630894	0.1760			0.4623409	0.4238
dialect	-0.1069661	0.1447	0.2289345	0.2304			-0.1748474	0.6608
sdialect	0.0988287	0.1485	-0.2956181	0.1912			-0.2554288	0.5431
resperiod	0.0015205	0.0024	-0.0063511	0.0043			0.0249349**	0.0110
health	-0.0562652	0.1666	-0.0589162	0.1497			0.0236954	0.8115
Occup1- Cadre	0.184799	0.1140	0.2688162	0.1782				
Occup2- Mangerial	0.2314771	0.2503	0.1940107	0.1693			0.496132	0.4699
Occup3- Mass Median	0.2724796**	0.1180	0.3122523**	0.1498				
Occup4- Craftsman	0.2597859**	0.1138	-0.0075723	0.1665			-0.7438652*	0.3814
Occup5- Machine Ope	0.0629957	0.1592	-0.1117336	0.1348			-0.3102116	0.2506
Occup6-Business Oper	0.1617906	0.1558	-0.0808177	0.1646			-0.1304019	0.3526
Occup7- Clerks	0.3620941	0.3106	0.2166304	0.1540			-0.6773812**	0.3326
city1-Shaoguan	0.4280575**	0.1842	0.2282484	0.2849			0.9133977	0.6828
city2-Guangzhou	0.7429991***	0.1684	0.7924015***	0.2119			1.274051*	0.6499
city3-Zhanjian	0.1727462	0.1737	0.2601948	0.2794			1.037488*	0.6214
city4-Shenzhen	1.486955***	0.1479	1.365506***	0.2189			2.723478***	0.5184
city5-Dongguan	0.7625312***	0.1672	0.8294661***	0.2648			1.321939**	0.6048
city6-Shantou	0.8042677***	0.1230	0.6942031***	0.1611			1.566349***	0.4491
Inverse of Mill's Ratio	-0.7784492*	0.4377	0.0831813	0.5073	8.269724**	3.4035	-0.670771	0.6646
Intercept	3.373043***	0.5563	1.990913**	0.7983	-3.92098	5.2375	2.220763*	1.2993
Observations	301.00000		304		12		90	
R-squared	0.58230		0.4684		0.3333		0.5383	

Table 5 Demographic and Economic Situation of The Surveyed Areas (2000)

	Shenzhen	Guangzhou	Dongguan	Shantou	Shaoguan	Zhanjian	Meizhou
Proportion of city resident population (%)	92.46	83.79	60.04	67	51.13	38.47	37.21
Population* (thousand)	7008.4	9943	6445.7	4671.1	2735.1	6072.9	3802
Density of Population (per/km2)	3596	1337	2615	2263	149	487	240
Age of the respondent	37.58	42.71	40.50	41.86	40.22	39.70	42.59
Total years of schooling	12.59	11.42	9.99	11.63	11.25	10.97	11.11
Gender: 1 if male, 0 if female	0.41	0.48	0.44	0.48	0.48	0.48	0.46
Birthplace: 1 if inside Guangdong province	0.57	0.84	0.94	0.96	0.87	0.94	0.97
Number of samples	300	400	252	300	251	250	250

(1) source of population data: "Fifth National Population Census of China 2001"executed in November 1, 2000, other summary statistics stems from FSST(2000). (2) Population* includes not only residents but also visitors of the city. Absent residents are not reported in the population of their inhabitated area. (3)1RMB＝15JPY

Table 6 Average Earning by Source in Guangdong Province and Its Sources (2000)

	Mean Values (Yuan/year)						
City	Shenzhen	Guangzhou	Dongguan	Shantou	Shaoguan	Zhanjian	Meizhou
Total Earning	45515.25	16660.8	16803.79	16267.8	14607.4	11041.49	9256.61
Cash income from the formal job	39143.36	15265.24	15434.52	14766.7	12594.29	9777.447	8000.98
Cash income from the informal job	796.4602	352.6471	553.5484	222.222	361.165	370.2128	197.419
Other material benefit	5575.425	1042.917	815.7258	1278.92	1651.942	893.8298	1058.21
	Share of total income						
Total Earning	100%	100%	100%	100%	100%	100%	100%
Cash income from the formal job	86%	92%	92%	91%	86%	89%	86%
Cash income from the informal job	2%	2%	3%	1%	2%	3%	2%
Other material benefit	12%	6%	5%	8%	11%	8%	11%

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