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Kong Wing, Clement CHOW
ckwchow@ln.edu.hk

Ka Yiu, Michael FUNG

Hang Yue NGO

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**JOB TURNOVER IN CHINA:
A CASE STUDY OF SHANGHAI'S
MANUFACTURING ENTERPRISES***

*Clement Kong Wing CHOW
Hong Kong Institute of Business Studies and
Dept of Marketing and International Business
School of Business
Lingnan College*

*Michael Ka Yiu FUNG
Dept of Decision Sciences & Managerial Economics
Faculty of Business Administration
The Chinese University of Hong Kong*

and

*Hang Yue NGO
Department of Management
Faculty of Business Administration
The Chinese University of Hong Kong*

Hong Kong Institute of Business Studies
Lingnan College
Tuen Mun
New Territories
Hong Kong
Tel : (852) 2616 8373
Fax: (852) 2575 4171

Clement Kong Wing CHOW
Hong Kong Institute of Business Studies and
Dept of Marketing and International Business
Lingnan College

Tuen Mun, Hong Kong
Telephone: (852) 2616 8370
Fax: (852) 2572 4171
E-mail: ckchow@ln.edu.hk

Michael Ka Yiu FUNG
Dept of Decision Sciences & Managerial Economics
Faculty of Business Administration
The Chinese University of Hong Kong

Shatin, Hong Kong
Fax: (852) 2603 5104 or (852) 2603 6840

and

Hang Yue NGO
Department of Management
Faculty of Business Administration
The Chinese University of Hong Kong

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ABSTRACT

This paper studies the job turnover among manufacturing enterprises in Shanghai during the period from 1989 to 1992. Various indicators of job turnover, including job expansion rate, job contraction rate, net job growth rate, gross job reallocation rate, and excess job reallocation rate are calculated. The empirical results demonstrate that types of ownership and firm size are significant factors in accounting for the changes in job generation and job reallocation. Among various types of enterprise, international joint ventures and small firms (i.e., those that employ less than 100 workers) are more able to create jobs and to generate job reallocation.

I. INTRODUCTION

Industrial reform has been central to China's program of market-oriented economic reforms launched in 1978. Its ultimate goal has been to improve the efficiency of state-owned enterprises by moving away from the socialist system of resources allocation guided by central planning and administrative directives. In furthering this end, significant changes have been taken place in employment policies and practices that led to the emergence of a competitive urban labor market(Knight & Song, 1995; Warner, 1996). A remarkable consequence has been a dramatic increase in job mobility for industrial workers, which was unlikely under the old employment system.

The labor force in China is estimated by the World Bank to grow at an annual rate of 1.3% in the coming 30 years. How to provide sufficient jobs and maintain stable employment under mounting market competition becomes a pressing challenge for the Chinese policy-makers, since widespread unemployment may cause social turmoil. This issue has been further complicated by the attempt of state-owned enterprises to "rationalize" their workforce so as to improve labor productivity. Fortunately, economic liberalization and open-door policies have encouraged private and foreign-invested firms to flourish and create jobs. Coastal cities perform better in terms of employment growth owing largely to their physical locations and higher degree of socio-economic development. Among them, Shanghai is a typical example that deserves close investigation.¹

Shanghai, with a population of over 13 million, is China's largest city and dominant industrial center. Like other major cities in the country, its population size is under tight control by the state. The inflow of labor from rural areas has been held in check by a strictly enforced policy of household registration, which in effect protects the job opportunities of local residents. Moreover, during the last decade, foreign direct investments through international joint ventures in Shanghai has created massive job opportunities and stimulated job mobility of industrial workers there. Yet a general understanding of job turnover activity² in contemporary China is restricted by the paucity of research. The present study intends to fill this void by providing concrete measures of job turnover in the manufacturing sector of Shanghai.

Two objectives inform this study. First, we examine the expansion and shrinkage of job opportunities in Shanghai's manufacturing enterprises. Second, we investigate the nature of job

reallocation among these enterprises. Especially, the job turnover characteristics of firms as distinguished by size and ownership type, which contain important policy implications, will be explored in depth.

Before 1978, the Chinese industrial sector was dominated by state-owned enterprises. One of the prominent outcomes of economic reforms in China has been the substantial expansion of the non-state sector which includes collective, international joint ventures, and private enterprises.³ These enterprises, involving different types of ownership, have gained different degrees of autonomy in decision making as well as different levels of assistance from either the central or local governments. This study aims to provide empirical evidence for the expectation that these enterprises, facing different constraints and opportunities, behave differently in terms of job turnover as compared to state-owned firms.

Since enterprises also differ in terms of employment size, which implies variations in personnel policies and workplace flexibility, patterns of job turnover are likely to differ accordingly. In most developed countries, small firms play an important role in job creation (Birch, 1987; Davis and Haltiwanger, 1992). Do small firms in a transitional economy like China behave in a similar way? This present study addresses this question; and one underlying hope is that the answer provided can give valuable information to the Chinese government in formulating employment and small business policies.

The article consists of five sections. Section II is a general description of major employment changes in the Chinese economy since 1978. Section III contains a discussion of methodological issues that offer a basis for measuring job expansion, job contraction, and job reallocation. Section IV presents concrete measures of job turnover. The differences by types of ownership and firm size will be highlighted. Section V concludes the present study by discussing policy implications regarding employment, foreign investment, and small businesses in China.

II. EMPLOYMENT CHANGES

The traditional labor system in socialist China was rather rigid.⁴ The State took full responsibility for the assignment of employment. The allocation of workers to state-owned

enterprises was closely planned and tightly regulated. Under such system, an individual worker did not have the right to choose his job, nor did the enterprises have the freedom to recruit or dismiss their staff. This created the problems of low labor efficiency and redundant labor, especially in the state-owned sector.

Several important policy changes, aiming to enhance employment flexibility have been taken place in the labor system during the last decade. First of all, economic liberalization has led to the emergence of a competitive labor market, which gives workers freedom to choose jobs and gives enterprises autonomy to recruit labor according to their manpower needs. Under the new "labor contract system" introduced in 1986, both labor and management are free to sign fixed-term contracts that stipulate their rights, duties and benefits. Based on the performance of workers, contracts can be terminated or renewed upon expiration. In effect, these contractual arrangements have replaced the traditional "iron rice bowl" system which implied life-long employment for workers in the state-owned enterprises.⁵ Labor Service companies have also been set up widely throughout the country, serving as a bridge between workers and prospective employers for entering into new employment relations.

A second development regarding labor utilization has been the authority given to state-owned enterprises to rationalize their workforce so as to improve productivity. "Surplus" (or redundant) workers are now taken out of front-line production and transferred to subsidiary enterprises engaged in supporting services or to separate work-teams engaged in miscellaneous tasks or training.⁶ The state-owned enterprises have gained additional flexibility through hiring casual labor, often on a temporary basis, to relieve seasonal manpower pressure. Enterprises can now reduce and enlarge their workforce in response to market conditions, which leads to an increase in job turnover.

Another major change lies in the compensation system. State-owned enterprises have gained more autonomy in administering their own internal allocation mechanisms. In addition to the restoration of bonuses as a key component of material incentives, emphasis has also been placed on performance-based pay and greater wage differentials among workers. The egalitarian principle adopted in the past has been gradually abandoned for the sake of motivating workers. Growing disparities in rewards, however, have stimulated labor mobility across industries and enterprises (Chow and Shenkar, 1989).

With regard to human resources management, international joint ventures enjoy the highest degree of flexibility among various types of firms. As a part of the policy favoring foreign investment, these firms have been largely freed from administrative regulations and interference in employment practices so that they may recruit, hire, and fire at will. To attract better qualified staff, they often offer higher rewards and more fringe benefits. Given their flexible personnel practices, it is expected that job turnover in joint-venture firms will be higher than other enterprises.

III. DATA AND METHODOLOGY

The data we employed for the empirical analysis was supplied by the Shanghai Economic Commission. The data cover all those manufacturing enterprises in Shanghai Municipality whose average annual gross value of output (measured at 1990 prices) exceeded one million Chinese Yuan from 1989 to 1992.⁷ Altogether, there are 5,413 such enterprises distributed in 32 industries; but the industry of "coking, gas and coal-related products" is excluded in our analysis because of insufficient data. For each firm, data on input-output information, employment size,⁸ and ownership type are available. Four types of enterprises are identified in this data set: state-owned enterprises (SOEs), collective-owned enterprises (COEs), international joint ventures (IJVs), and other enterprises (OEs) which include private enterprises and some state and collective jointly owned enterprises.

[Insert Table 1 about here]

Table 1 classifies enterprises by types of ownership across 32 industries: 46% are COEs, 36% are SOEs, 15% are OEs, and 3% are IJVs. From the table, one may note that Shanghai specializes in industries that require higher engineering skills, such as machinery and electrical and electronics equipment. Yet a significant proportion of enterprises in light manufacturing such as textiles and clothing are also to be found.

[Insert Table 2 about here]

To assess the effect of firm size upon patterns of job turnover, enterprises are classified by size as measured by the average number of workers employed during the sample period. As shown in Table 2, the enterprises may be divided into five classes: 12% of them have less than

100 workers; 35% of them have between 100 and 249 workers; 29% of them have 250-499 workers; 15% of them have 500-999 workers; and the remaining 9% have 1,000 workers or more. The United States Small Business Administration defines "small firms" as those which employ fewer than 500 workers. In these terms, over three-quarters of Shanghai manufacturing enterprises can be considered as small, though they may exert tremendous impact on the industrial development of Shanghai, in that small firms tend to grow faster than large ones.⁹

Measuring Job Generation

Several rates have been used to measure job generation in the present study. The net job growth rate (NET) is calculated from the difference between the gross rate of job expansion (POS) and the gross rate of job contraction (NEG).¹⁰ First of all, EMP_{at} and EMP_{at-1} are defined as the employment of establishment a at times t and $t - 1$ respectively. We then use x_{at} to denote the simple average of an establishment's employment at times t and $t - 1$, i.e., $x_{at} = (EMP_{at} + EMP_{at-1})/2$. In a similar vein, x_{st} denotes the simple average of employment in sector s which includes all establishments within that sector at times t and $t - 1$. The time t employment growth rate of establishment a , denoted by g_{at} , is calculated by dividing the change in establishment employment from $t - 1$ to t by x_{at} : $(EMP_{at} - EMP_{at-1})/x_{at}$. One advantage of this definition is that this growth rate measure is symmetric about zero. This average measurement also removes part of the bias induced by transitory movements of the economy (Baldwin and Picot, 1995). In order to avoid the bias caused by variations in firm size, the sectoral measurement is computed on a size-weighted basis. We calculate the rate of gross job expansion, POS_{st} , by summing size-weighted employment gains in all expanding establishments within a sector. Similarly, we calculate the gross rate of job contraction, NEG_{st} , by summing size-weighted employment losses in all shrinking establishments within a sector. Mathematically, these two measures can be expressed as:

$$POS_{st} = \sum_{a \in E_{st}, g_{at} > 0} \left(\frac{x_{at}}{x_{st}} \right) g_{at}, \quad NEG_{st} = \sum_{a \in E_{st}, g_{at} < 0} \left(\frac{x_{at}}{x_{st}} \right) |g_{at}|$$

where E_{st} is the set of establishments in sector s at time t . The ratio (x_{at}/x_{st}) denotes the size-weight of establishment a among establishments in sector s at time t . The magnitude of POS_{st} (or NEG_{st}) measures the intensity of job expansion (or contraction) from time t to $t - 1$ in sector s

within the period under study. The rate of net job growth within a sector (NET_{st}) is measured by the difference between POS_{st} and NEG_{st} , i.e., $NET_{st} = POS_{st} - NEG_{st}$. A positive (or negative) NET_{st} implies a net gain (or loss) in job positions within the sector while its magnitude measures the intensity.

Measuring Job Reallocation

Although a positive or negative net job growth rate indicates an overall job expansion or job contraction in a given sector, employment patterns of individual enterprises may be different from the pattern of the sector as a whole. The decomposition of net job growth rate into job expansion rate and job contraction rate can provide more information about the heterogeneity in personnel policies and employment flexibility among enterprises within that sector. A higher job expansion rate implies more job vacancies for both labor market entrants and displaced workers in the sector. On the other hand, a higher job contraction rate indicates more layoffs within the sector. The sum of POS_{st} and NEG_{st} , SUM_{st} , measures the gross rate of job reallocation in sector s between times $t - 1$ and t . Whether a sector has active job reallocation can easily be indicated by the value of SUM_{st} as its magnitude reflects the total of job vacancies and layoffs in the sector.

When a sector is booming, a high gross rate of job reallocation is likely to be caused by a high rate of net job growth. The difference between SUM_{st} and the absolute value of NET_{st} is the rate of excess job reallocation, EXC_{st} , which is a nice measure of the amount of **simultaneous** job expansion and contraction within a sector. The magnitude of the EXC_{st} reveals the heterogeneity in employment policies and flexibility among enterprises in the same sector. Since the rate of excess job reallocation does not include job reallocation due to the net job growth in a sector, its magnitude provides information about the intensity of the reshuffling of job opportunities among enterprises within a sector.

By decomposing excess job reallocation into two different components, we can measure the extent of excess job reallocation as explained by the employment shifts between groups of enterprises (defined in terms of industry, firm size, or type of ownership).¹¹ The first component, which measures the excess job reallocation due to reshuffling employment between sectors, can be calculated by:

$$\sum_s |net\ employment\ change\ in\ s| - |overall\ net\ employment\ change|$$

where s indexes sector. The second component, which measures the excess job reallocation due to reshuffling employment within sector, is given by:

$$\sum_s (job\ reallocation\ in\ s - |net\ employment\ change\ in\ s|)$$

By construction, the sum of these two components equals the excess job reallocation. Accordingly, the fraction of excess job reallocation as explained by employment shifts among groups of enterprises can be calculated by dividing the first component by the sum of the two components. The magnitude of the fraction indicates not only the intensity of employment shifts between different groups of enterprises, but also the heterogeneity of disturbances and/or their reactions to disturbances among them.

IV. EMPIRICAL RESULTS

By calculating various measures of job generation and job reallocation as discussed in previous section, one can get a clear picture of the job turnover patterns in Shanghai's manufacturing sector. The special attention paid in this study to variations in job generation and job reallocation by ownership type and firm size now put us in the position of deriving some relevant implications for China's economic and business policies.

Job Generation

[Insert Table 3 about here]

Table 3 reports the gross and net rates of job turnover by different types of ownership in Shanghai. There are substantial variations in rates of net job growth (NET) across various types of ownership, which ranges from 0.7% in state-owned enterprises to 9.7% in international joint ventures. Although industrial reform was primarily carried out in state-owned enterprises, their relatively low employment flexibility and weak management limited their expansion in the booming Chinese economy. This probably explains why the smallest rate of net job growth appears in the state sector.

Among those enterprises in the non-state sector, international joint ventures are obviously the champions in the job expansion race with an overall rate of net job growth twelve times as large as that of state-owned enterprises. With nearly full autonomy in employment decisions, favourable government policies, as well as more effective management, international joint ventures are growing faster and creating more jobs for the economy. However, given that the proportion of international joint ventures in the manufacturing sector is still small, their role in absorbing the redundant labor from the state sector is rather limited.

[Insert Table 4 about here]

Table 4 shows the net and gross rates of job turnover by firm size. With regard to job expansion, the smallest enterprises (i.e., those employing fewer than 100 workers) have the largest rates of gross and net job expansion (POS and NET), which are more than three times as large as those of the largest enterprises (i.e., those employing more than 1,000 workers). This remarkable difference in the capacity of job generation between small and large firms is consistent with studies conducted in the West. However, the contribution of small enterprises in generating jobs should not be exaggerated in the Chinese context because they only account for a small share of industrial employment. The prowess of small enterprises in job creation nevertheless suggests that Chinese policy-makers should pay more attention to them during the process of reforming the urban economy, particularly when the policy focus is on generating more jobs.

[Insert Table 5 about here]

To separate the effect of ownership type from the effect of firm size, we have computed the net and gross rates of job turnover for each size class within each type of ownership.¹² The results are reported in Table 5. Within each type of ownership, one can see that small enterprises in general have higher rates of net job growth as compared to their larger counterparts. This finding is in line with those reported above, which further support the argument that smaller enterprises are more capable of generating jobs. The results shown in Table 5 also reveal that, for each size class, international joint ventures have higher rates of net job growth than other enterprises.

[Insert Table 6 about here]

We then employ regression analysis to investigate simultaneously the effects of various predictors on job turnover. Recall that enterprises are classified by their types of ownership, employment size, and industry. Different rates of job turnover are computed in each classification for every year within the sample period. Table 6 gives the results of F-tests for the effects of ownership type, size, industry, and time. Most of our findings reported in Tables 3 and 4 are confirmed again here, based on the results of statistical testing. In particular, type of ownership is found to be an important factor in explaining the variations in rates of job expansion and net job growth, while firm size plays a key role in explaining the variations in rates of job expansion and job contraction.

Job Reallocation

We turn to examine the behavior of job reallocation among manufacturing enterprises in Shanghai. Other than their effects on job generation, both ownership type and firm size are found to be significant factors in accounting for the variations in rates of gross and excess job reallocation, as shown in Table 6. Recall that in Tables 3 and 4 the rates of gross job reallocation (SUM) of international joint ventures and smallest enterprises are almost four times those of state-owned enterprises and largest enterprises respectively. In short, the former classes in general can generate relatively more job vacancies and layoffs than the latter ones. The higher rates of gross job reallocation of international joint ventures and smaller enterprises may also imply that they are more conducive to job mobility of workers within the labor market.¹³

The within-group heterogeneity among enterprises with respect to job reallocation can be indicated by the magnitude of excess job reallocation (EXC). Although the rate of gross job reallocation (SUM) of international joint ventures is relatively high, the low rate of excess job reallocation (EXC) suggests that the intensity of simultaneous job expansion and job contraction of international joint ventures is not especially high. This may be due to the uniform pattern of net job expansion among international joint ventures which respond to the booming Chinese economy and favourable state policies in a similar way. On the other hand, for the group of smallest enterprises, the rate of excess job reallocation is almost five times that of their larger counterparts. This implies that, irrespective of the gross job reallocation, the intensity of simultaneous job expansion and job contraction among the small enterprises is also high. With greater flexibility in employment, small enterprises are more heterogeneous in their job turnover

behavior as compared to their larger counterparts. This within-group heterogeneity may require special attention of policy-makers in formulating small business policies.

[Insert Table 7 about here]

To sum up, the above findings reveal that type of ownership and firm size are two significant firm-level factors that explain the intensity of job generation and job reallocation. It also appears no less important to examine employment shifts among enterprises of different types of ownership and size. To address this issue, enterprises are classified by ownership, size, and industry and then the fraction of excess job reallocation as explained by between-sector employment shifts is calculated for various sectoral classifications. As shown in the top panel of Table 7, employment shifts among enterprises of different size, types, and both size and types together explain almost none of the excess job reallocation. In contrast, employment shifts among enterprises of different industries do account for 18 percent of excess job reallocation. When we consider types of ownership, size, and industries all together, 23 percent of excess job reallocation can be explained. The industry-specific decompositions yield similar results, which are reported in the lower panel of Table 7. Neither size nor type of ownership can explain much of the excess job reallocation in most of the industries. In other words, the job mobility of workers across enterprises of different sizes or different types of ownership is very limited, even though differential patterns of job turnover exist among various groups of enterprises.¹⁴

Labor Productivity

In the foregoing we have explained the effect of ownership type on job turnover in light of differential employment flexibility, as well as the role played by assistance and constraints provided from the state. Do these differences imply intra-firm variations in productivity? To answer this question, we use labor productivity as a measure of firm-level productivity. The labor productivity of firm *i* in sector *j* in year *t* is obtained by dividing the firm's gross industrial product¹⁵ at constant prices by the average labor employment in the same year. After the firm-level labor productivity for each year is calculated, we then calculate the average annual growth rate of labor productivity in each sector for the period of 1989-1992. As reported in Table 3, international joint ventures have the highest average growth rate of per capita output, YPLG, over the sample period, while state-owned enterprises record the lowest. It seems that

international joint ventures not only create more employment opportunities, but also manage their growth in labor productivity much better than other enterprises. Similar findings for small enterprises are also noted and reported in Table 4.

V. CONCLUSION

Using firm-level panel data supplied by the Shanghai Economic Commission, this study investigates job turnover of manufacturing enterprises in Shanghai during the period of 1989 to 1992. It contributes to the existing literature by exploring an important yet under-researched topic in urban China. In addition, it also derives a number of policy implications. A major finding of this study is that types of ownership and firm size are important factors in understanding job generation and job reallocation behaviors of enterprises.

First and foremost, regarding job expansion and job contraction, international joint ventures and small enterprises generate more jobs while at the same time eliminate fewer jobs. In particular, the rate of net job growth of international joint ventures is roughly twelve times that of state-owned enterprises; and the rate of the smallest sized enterprises is roughly three times that of the largest sized enterprises. If we turn to job reallocation, international joint ventures and small enterprises also have higher rates of gross job reallocation than other enterprises.

The outstanding performance of international joint ventures and small firms in generating job opportunities has several implications for the Chinese economic reforms. A common feature of international joint ventures and small firms is that they enjoy a high level of employment flexibility. Being free from administrative control and interference by the government, these firms can design and administer their personnel policies in accordance with manpower needs. Thus, they have gained an upper hand in the management of human resources. In view of this, creating more jobs in the economy will call for further liberalization of the labor market and the provision of more autonomy in employment for the state-owned enterprises which have limited flexibility and autonomy in managing their workforce.

In the past, following the Russian model of industrialization, the Chinese government adopted an industrial policy of establishing large enterprises in order to capture the economies

of scale. The advantages of small establishments, such as flexibility and responsiveness, were largely overlooked. Our study highlights the role and achievements of small enterprises, suggesting that the Chinese government should place a greater emphasis on stimulating small businesses in the process of economic reforms. However, small enterprises in the Chinese economy, like their counterparts in developed countries, are facing a number of problems which limit their growth and potential of job creation. For example, it has been pointed out that small firms have greater difficulties in obtaining funds from banks in market economies (Churchill and Lewis, 1986); and this problem is particularly acute in China.¹⁶ Human resources present another problem that handicaps the growth of small firms in developed countries, because they cannot be as competitive as the large firms in recruiting well-qualified managers and staff. This is a serious problem in China, since the Chinese labor market is characterized by imperfect market information and a limited supply of qualified managerial staff. Policies favoring small businesses, such as establishing a small business assistance program similar to those in developed countries (Stanworth and Stanworth, 1990), should be designed to provide financial assistance and training programs.

Although we have shown the importance of small firms in the Chinese industrial labor market, the high degree of heterogeneity among them as reflected by a relatively high magnitude of excess job reallocation, may present difficulties in designing effective small business policies. More academic and policy research should be carried out to explore various issues encountered by small enterprises in China. With more information and clearer strategy, the Chinese government might play a more active role in providing appropriate assistance to them in the future.

Endnotes

1. According to government statistics, Shanghai ranked third in terms of job mobility among various provinces and major cities in China during the 1980's. It is expected that the rate will be even higher in the coming decade. In addition, a survey on job change of scientific and technical personnel in Shanghai showed that about 46% of them had moved from one work unit to another, and some even had moved several times in the past decade (Tan, 1994).

2. We use the term 'job turnover' because our study measures the number of jobs created and destroyed annually by the existing firms in the manufacturing sector of Shanghai. This definition is actually measuring the changes of jobs offered by the work units (i.e., the labor demand side).

3. The non-state sector is dominated by the collective-owned enterprises which were developed from the cooperatives before the economic reforms. The impressive performance of these enterprises is shown by Jefferson, Rawski, and Zheng (1992). The second type of non-state enterprises are foreign-invested firms. The economic impacts of foreign direct investments in the country are discussed in Kamath (1990). Private enterprises are the third major type of non-state enterprises. A general discussion of the development of private sector in China is provided in Chang and Macmillan (1991) and Tsang (1994).

4. There were two major characteristics of the old labor system in China. The first was to exclude the operation of a competitive labor market and to restrain the movement of the workers. The second was the high degree of repetition of the employment mechanism and the welfare and security mechanism.

5. According to government statistics, more than 20% of the labour force in the country has been covered under the 'labor contract system' by the end of 1993. The figure is even higher in major cities like Shanghai (Warner, 1996; Yearbook of Hua Rew Economy, 1994).

6. Workers with poor performance tended to be assigned to those work teams. Although the basic wages continued to be paid, the loss of bonuses and other fringe benefits served as a kind of punishment and force them to perform better. For those workers who had been transferred to subsidiary businesses are likely to be in their mid-age, particularly women (Byrd, 1992).

7. The sample is restricted to enterprises that were in existence throughout the sample period. Hence, births and deaths of firms during the period are not included in the present study.

8. Employment size is measured by the average employment of production workers and managerial personnel in a year.

9. The empirical evidence that small firms grow faster than large firms is thoroughly discussed in Evans (1987a, 1987b) and Storey, Keasey, Watson, and Wynarczyk (1987).

10. In computing the gross and net rates of job turnover, we follow the method suggested by Davis and Haltiwanger (1992).

11. In decomposing excess job reallocation, again we follow the method suggested by Davis and Haltiwanger (1992).

12. Within each type of ownership, enterprises are classified into the five size classes. For each size class which is treated as one group, we compute the net and gross rates of job turnover for each year by using the method discussed in section III. We then computed the averages of these rates for each group.

13. Although the rates of job reallocation for international joint ventures and small enterprises are relatively high compared to other enterprises in Shanghai, they are still relatively low according to the findings for other countries (Davis, Haltiwanger, and Schuh, 1996).

14. The limited employment shifts among different groups of firms are also found in the U.S.A. as reported by Davis and Haltiwanger (1992).

15. The gross industrial product at constant prices is calculated by deflating the values measured at current prices by its product price index using 1980 as the base year. Since the state-owned enterprises can obtain raw materials at highly subsidized (state-controlled) prices from the state which is still controlling key materials and energy inputs, value-added data like net industrial product seem to be a biased indicator of the actual output. The implication is discussed in McGuckin and Nguyen (1993). For that reason, gross industrial product is used as an indicator of output by which the growth rates of real gross industrial product per worker are calculated for each firm.

16. Unlike the successful reforms in other aspects, the financial institutions emerging from the first wave of reforms are still characterized by large inefficiencies, lack of competition, and extensive government involvement in credit allocation which lead to "lending bias" towards large state-owned enterprises (Miurin and Sommariva, 1993; Perotti, 1993).

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TABLE 1
DISTRIBUTION OF FIRMS BY OWNERSHIP AND INDUSTRIES

Industry	SOE	COE	IJV	Others	Total
Mining of building materials & nonmetal minerals	1	1	0	0	2
Water production & supplies	9	0	0	0	9
Food	163	64	3	14	244
Beverage	24	27	2	8	61
Tobacco	1	1	0	0	2
Forage	60	2	0	3	65
Textile	269	216	25	144	654
Clothing	33	192	13	102	340
Leather & Furs	31	29	10	22	92
Timber, bamboo, cane, palm fibre & straw products	18	8	2	8	36
Furniture	14	23	0	7	44
Pulp & Paper product	40	56	0	16	112
Printing	45	55	2	8	110
Cultural, educational & sports articles	58	50	5	26	139
Arts & crafts	14	47	3	28	92
Power generation, steam & hot water production & supplies	3	0	0	0	3
Petroleum processing	2	4	0	2	8
Chemical	108	119	7	39	273
Medical & Pharmaceutical	44	30	2	9	85
Chemical fibres	2	9	1	5	17
Rubber	25	33	2	14	74
Plastics	37	116	10	28	191
Building materials & nonmetal mineral products	73	150	5	18	246
Smelting and pressing of Ferrous metals	22	25	0	23	70
Smelting and pressing of Non-ferrous metals	21	43	2	12	78
Metal products	131	266	9	73	479
Machinery	421	435	13	109	978
Transportation equipment	61	81	5	27	174
Electrical equipment	98	211	5	45	359
Electronics & tele-communication equipment	50	97	13	15	175
Instruments, metres & other measuring equipment	59	70	3	7	139
Other manufacturing	9	43	2	8	62
Total	1946	2503	144	820	5413

TABLE 2
SIZE DISTRIBUTION OF FIRMS BY INDUSTRIES

Industry	Size ¹				
	0-99	100-249	250-499	500-999	>1000
Mining of building materials & nonmetal minerals	0	0	2	0	0
Water production & supplies	1	6	2	0	0
Food	76	94	53	11	10
Beverage	11	23	17	9	1
Tobacco	0	0	1	0	1
Forage	52	12	1	0	0
Textile	24	136	186	184	124
Clothing	28	112	128	68	4
Leather & Furs	13	38	26	10	5
Timber, bamboo, cane, palm fibre & straw products	3	18	8	3	4
Furniture	8	23	9	3	1
Pulp & Paper product	13	43	36	14	6
Printing	18	55	17	14	6
Cultural, educational & sports articles	6	41	59	28	5
Arts & crafts	12	34	36	8	2
Power generation, steam & hot water production & supplies	0	0	1	0	2
Petroleum processing	3	3	1	0	1
Chemical	42	109	59	36	27
Medical & Pharmaceutical	15	25	27	10	8
Chemical fibres	4	6	5	1	1
Rubber	3	21	23	15	12
Plastics	33	82	57	14	5
Building materials & nonmetal mineral products	21	86	92	25	22
Smelting and pressing of Ferrous metals	7	21	17	7	18
Smelting and pressing of Non-ferrous metals	9	36	19	7	7
Metal products	46	191	179	53	10
Machinery	84	352	256	152	134
Transportation equipment	23	53	37	33	28
Electrical equipment	44	130	91	63	33
Electronics & tele-communication equipment	12	63	37	32	31
Instruments, metres & other measuring equipment	16	45	44	26	8
Other manufacturing	17	30	9	5	1

Total	641	1873	1560	825	514
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Notes: 1. Size is measured by the average employment of enterprises over the period of 1989-1992.

TABLE 3
NET AND GROSS RATES OF JOB TURNOVER BY TYPES OF OWNERSHIP
(SIZE-WEIGHTED GROWTH RATES¹)

Ownership	POS	NEG	NET	SUM	EXC	YPLG ²	N
SOE	0.0275	0.0206	0.0070	0.0481	0.0265	0.1077	1946
COE	0.0479	0.0412	0.0067	0.0891	0.0504	0.1522	2503
IJV	0.1268	0.0294	0.0974	0.1562	0.0285	0.2990	144
Others	0.0648	0.0304	0.0344	0.0952	0.0420	0.1399	820

- Notes: 1. The weight of an individual enterprise i in a type of ownership j of an industry k are defined as the size of enterprise i , x_{ijk} , in that type of ownership j of industry k divided by the aggregate size of that type of ownership of industry j , $X_{jk} = \sum_i x_{ijk}$, i.e. x_{ijk}/X_{jk} . Then gross rates of job turnover in each type of ownership are computed for each industry. By averaging these gross rates of job turnover, the turnover rates of each type of ownership in this table are obtained.
2. YPLG is the average annual growth rate of labor productivity of all enterprises in the study period.

TABLE 4
NET AND GROSS RATES OF JOB TURNOVER BY SIZE
(SIZE-WEIGHTED GROWTH RATES¹)

Size	POS	NEG	NET	SUM	EXC	YPLG	SHARE ²	N
0-99	0.0705	0.0430	0.0275	0.1135	0.0644	0.1567	0.0419	641
100-249	0.0540	0.0413	0.0127	0.0953	0.0654	0.1637	0.1850	1873
250-499	0.0444	0.0273	0.0171	0.0716	0.0361	0.1292	0.2432	1560
500-999	0.0316	0.0280	0.0036	0.0596	0.0287	0.1093	0.2110	825
>1000	0.0228	0.0155	0.0073	0.0383	0.0142	0.0939	0.4190	514

Notes:1. The weight of an individual enterprise i in a size class j of an industry k is defined as the size of enterprise i , x_{ijk} , in that size class j of industry k divided by the aggregate size of that size class of industry j , $X_{jk} = \sum_i x_{ijk}$, i.e. x_{ijk}/X_{jk} . Then gross rates of job turnover in each size class are computed for each industry. By averaging these gross rates of job turnover, the job turnover rates of each size class in this table are obtained.

2. The employment share of the corresponding class of enterprises is measured in terms of the ratio of average employment of that class of firms over the total average employment of all enterprises during the period of 1989-1992.

TABLE 5
NET AND GROSS RATES OF JOB TURNOVER BY SIZE AND TYPES OF
OWNERSHIP (SIZE-WEIGHTED GROWTH RATES)

Size	POS	NEG	NET	SUM	EXC	YPLG	N
SOE							
0-99	0.0650	0.0293	0.0357	0.0942	0.0269	0.1170	163
100-249	0.0375	0.0388	-0.0013	0.0763	0.0303	0.1223	341
250-499	0.0348	0.0241	0.0107	0.0589	0.0240	0.1264	526
500-999	0.0225	0.0229	-0.0004	0.0454	0.0197	0.0935	475
1000+	0.0234	0.0156	0.0078	0.0389	0.0106	0.0849	441
COE							
0-99	0.0669	0.0538	0.0131	0.1207	0.0591	0.1818	349
100-249	0.0464	0.0453	0.0011	0.0918	0.0590	0.1629	1252
250-499	0.0420	0.0307	0.0112	0.0727	0.0338	0.1274	746
500-999	0.0527	0.0577	-0.0050	0.1104	0.0205	0.1432	214
1000+	0.0539	0.0134	0.0405	0.0672	0.0105	0.0629	27
IJV							
0-99	0.1680	0.0131	0.1549	0.1811	0.0155	0.1553	45
100-249	0.1336	0.0424	0.0912	0.1761	0.0285	0.4298	42
250-499	0.1255	0.0214	0.1041	0.1469	0.0067	0.3362	23
500-999	0.0821	0.0151	0.0670	0.0972	0.0108	0.2121	16
1000+	0.0200	0.0164	0.0037	0.0364	0.0058	0.2870	8
Others							
0-99	0.0560	0.0348	0.0213	0.0908	0.0332	0.1414	115
100-249	0.0737	0.0372	0.0364	0.1109	0.0471	0.1702	275
250-499	0.0538	0.0344	0.0194	0.0882	0.0340	0.1226	275
500-999	0.0700	0.0265	0.0435	0.0965	0.0128	0.0994	123
1000+	0.0322	0.0176	0.0146	0.0497	0.0157	0.1755	33

TABLE 6
TESTING FOR TYPES OF OWNERSHIP EFFECT, SIZE EFFECT, INDUSTRY
EFFECT AND TIME EFFECT

EFFECTS	POS	F Statistic Values			SUM	EXC
		NEG	NET			
Ownership ¹	37.853**	1.480	24.712**		21.208**	11.737**
Size	5.170**	3.715**	0.677		9.255**	36.020**
Industry	2.883**	2.447**	1.879**		3.697**	6.153**
Time	0.744	10.390**	5.905**		3.154**	8.946**
Ownership, size, industry and time	6.992**	2.974**	4.178**		6.784**	9.253**

Notes: 1. '**' and '**' indicate that the corresponding effect is present and statistically significant at five and one percent level of significance.

TABLE 7
FRACTION OF EXCESS JOB REALLOCATION DUE TO BETWEEN-GROUP
EMPLOYMENT SHIFTS BETWEEN 1989 AND 1992

Group Type	Total Manufacturing				
	Size	Ownership	Industry	All ¹ ex ind	All ²
Number	5	4	32	20	640
	0.00	0.00	0.18	0.03	0.23
Industry ³					
Group type	Size	Ownership	All		
Numbers of groups	5	4	20		
Industry					
Food	0.09	0.00	0.14		
Beverage	0.14	0.23	0.38		
Textile	0.03	0.20	0.22		
Clothing	0.00	0.00	0.04		
Leather & Furs	0.00	0.06	0.12		
Timber, bamboo, cane, palm fibre & straw products	0.12	0.17	0.27		
Printing	0.06	0.04	0.07		
Cultural, educational & sports articles	0.06	0.16	0.18		
Arts & crafts	0.03	0.18	0.26		
Chemical	0.00	0.00	0.00		
Medical & Pharmaceutical	0.00	0.00	0.14		
Chemical fibres	0.32	0.00	0.40		
Rubber	0.02	0.00	0.13		
Plastics	0.15	0.02	0.26		
Building materials & nonmetal mineral products	0.23	0.15	0.27		
Smelting and pressing of Non-ferrous metals	0.32	0.29	0.32		
Metal products	0.09	0.09	0.18		
Machinery	0.02	0.06	0.10		
Transportation equipment	0.00	0.00	0.03		
Electrical equipment	0.00	0.00	0.00		
Electronics & tele- communication equipment	0.23	0.38	0.40		
Instruments, metres & other measuring equipment	0.03	0.00	0.16		
Other manufacturing	0.25	0.22	0.45		

- Notes:
1. Based on a grouping of enterprises by size and ownership simultaneously.
 2. There are 114 empty cells.
 3. 9 industries with empty cells are deleted.