

**WHAT DETERMINES THE EXTENT TO WHICH EMPLOYERS  
WILL COMPLY WITH THEIR SOCIAL SECURITY OBLIGATIONS?  
EVIDENCE FROM CHINESE FIRM LEVEL DATA**

**Chris Nyland, Russell Smyth and Cherrie Jihua Zhu**

*Working Paper 14/05  
March 2005*

**DEPARTMENT OF MANAGEMENT  
WORKING PAPER SERIES  
ISSN 1327-5216**



**Abstract**

This paper aims to extend understanding of employer responses to social protection regulations enacted by government to insure the wellbeing and security of employees. By utilizing firm specific data collected from Shanghai we explore the association between firm characteristics, employer behaviour, and the effectiveness of compliance mechanisms that have been adopted to contain contribution evasion on the part of employers. We offer empirical evidence about the impact of firm's size, ownership structure, and incidence of risk on employer evasion behaviour in social protection payments. These results should not only enable enforcement agencies to improve compliance levels, but also contribute to the theory-building of the significance of social policies to employers and the impact of social protection on human resource policy.

*This paper was presented to the ANZIBA Annual Conference, 5-6 November 2004, University of Canberra*

**This paper is a work in progress. Material in the paper cannot be used without permission of the author.**

# WHAT DETERMINES THE EXTENT TO WHICH EMPLOYERS WILL COMPLY WITH THEIR SOCIAL SECURITY OBLIGATIONS? EVIDENCE FROM CHINESE FIRM LEVEL DATA

## INTRODUCTION

Ensuring that employers meet their social security obligations is a central need of all governments. No matter how well designed a social protection regime, if employers are able to evade mandated contributions the scheme will not fulfil its basic function of providing for the security needs of individuals and the community. In a great many instances this basic requirement is not being satisfied and this has become a critical problem in much of Central and Eastern Europe, Latin America, Africa and Asia. A common reason why a high rate of employer compliance is not attained is the costs associated with the policing of compliance. A primary aim of this paper is to assist the policing process by identifying the type of firm that tends to have a high rate of non-compliance. This knowledge has not previously been available because with few exceptions the social protection and policing literatures have accorded little attention to identifying the factors influencing the social policy preferences of firms. Reflecting our lack of knowledge about employer payment behaviour Mares notes as recently as 2002:

Fundamentally simple questions pertaining to firms' relationship to the welfare state remain, so far, poorly specified theoretically. What does social policy represent to firms? Is the welfare state only a constraint on firms, which comes in the form of higher costs or unnecessary labor market rigidities, or does it provide some tangible and immediate benefit to employers? When do the benefits offered by the welfare state to firms outweigh the costs imposed by social policies on business? We currently lack a theory of the significance of social policies to employers that specifies the sources of business interest in social policy and the conditions under which particular firms will actively support different policy arrangements (Mares, 2002, pp. 184-185, emphasis in original).

Mares (2002, 2003) has started to make significant inroads into addressing the problem she poses through developing a theory of when employers will, and will not, support social policies. She argues that firms' responses can be analysed in a two-dimensional social policy space where firms face a trade-off between control and risk redistribution and where the firm positions itself within the two dimensions depends on the incidence of risk, the size of the firm and the dependence of the firm on skilled labour. However, a problem Mares, and other researchers, have faced in attempting to explain when, why and how social policy matters to employers is the difficulty accessing a substantial body of relevant firm specific data that can assist examination of firm behaviour. This is because employers commonly fear that researchers might uncover practices for which the firm can be prosecuted (McGillivray 2001). Thus, studies in this area have tended to analyze employer responses to social security regulations by using deductive methods or macro-historical case studies of whole countries.

This paper examines what enterprise characteristics are associated with the ways in which employers respond to social protection regulations. We use a unique firm level data set from China that contains information on approximately 2200 firms collected by the Bureau of Labour and Social Security (BOLSS) in Shanghai. The data set contains information on whether the firm paid less than, more than or exactly the minimum prescribed amount of social insurance as well as the amount of underpayment or overpayment. It also contains information on the industry in which the firm operated, ownership type and the number of workers it employed. Using this data set we make two contributions to the literature on firms' behaviour in relation to social security regulations. The first is that we identify empirically what firm characteristics are associated with employer social protection behaviour. Second, we determine if the associations that exist between employer social protection behaviour and the characteristics of firms are significant and hence whether enforcement agencies would be wise to target specific types of enterprises in order to improve compliance levels.

We begin by reviewing the literature that has explored the reasons many employers fail to comply with their social protection obligations, the form and prevalence of contribution avoidance, and the strategies governments may adopt to manage this aspect of employer behaviour. Next, we outline the background to the compliance problem in Shanghai and how local administrators are seeking to combat employer contribution avoidance. To achieve this goal we supplement secondary sources with information obtained from interviews at the BOLSS and a select number of firms in Shanghai in November 2003. In total we conducted interviews at eight firms either with senior management and/or the human resources manager. We then proceed to test a number of hypotheses using the data set regarding links that may exist between firm characteristics and employer responses to social insurance based on Mares (2002).

## **EMPLOYER CONTRIBUTION AVOIDANCE: A DOMESTIC AND GLOBAL PROBLEM**

An element that informs research on employer contribution behaviour is the debate surrounding the association between social protection and globalisation. By social protection is meant “the set of policies and programs designed to reduce poverty and vulnerability by promoting efficient labour markets, diminishing people's exposure to risks, and enhancing their capacity to protect themselves against hazards and interruption/loss of income” (Asian Development Bank 2002). This definition includes policies and programs designed to insure communities and individuals against impoverishment due to unemployment, disability, medical treatment, ageing and other situations that limit people's ability to gain income from work or the ownership of resources (Cook 2002; Friedman & Jacobs, 2001). Scholars engaged in the global social protection debate range from those who insist the globalisation of markets has made it impossible for nations to sustain sophisticated social protection regimes because the cost undermines global competitiveness to those who argue national economies cannot remain globally competitive without such regimes (Jordan, 1998; Rieger & Leibfried, 1998; Hirst & Thompson, 1999; Rodrick, 1999, 2001; Cook 2002; Scharpf, 2000; Stiglitz, 1999; World Bank, 2001; Tanzi, 2002).

Where researchers are situated in the global social protection debate is influenced by the significance they accord the capacity of employers to avoid the costs of social security that accrue to the firm. The centrality of this issue to social protection regimes is generating a rapidly expanding literature on the nature, magnitude and causes of employer contribution evasion, and the countervailing strategies available to regulators.

### **The Nature and Extent of Employer Non-Compliance**

Employer evasion occurs when firms do not pay or underpay mandated social security contributions (Bailey and Turner 2001, p. 385). Evasion occurs when employers:

- fail to register themselves and some or all of their employees;
- portray employees as contractors, family members or belonging to other categories of workers for which the employer is not required to contribute;
- fail to remit, or delay payment, for registered employees; or
- understate earnings in order to reduce contribution liability (Gillion et al 2000).

Irrespective of the impact of employer non-compliance on global competitiveness, this practice is invariably a problem for the economy, individuals, and administrators. From an economy-wide perspective, it is a problem because evasion can result in labour market distortions, efficiency and output losses, diminished savings, and a national social security regime that has inadequate solvency (Manchester 1999, pp. 295-299). It is a problem for participants if it leads individuals to be under-resourced when security benefits are needed and/or if it means participants must contribute a greater share of their income to social security in order to provide for free-riders or

those whose contributions are misappropriated. For administrators it is a problem when it hampers the collection of contributions or increases the transaction costs associated with managing the system.

Because the evasion of mandated social protection contributions is by definition illegal, it is an activity that tends to be concealed and accurate data concerning its prevalence is scant. Estimates of the magnitude of the practice are usually based on the size of the labour force and average wages with the estimated aggregate contribution liability being compared with the actual payments. In the USA total employer contributions not paid voluntarily, as a percentage of the calculated 'true' liability, was estimated to be 10.3 per cent in 1997. For firms hiring workers the figure was 4.2 per cent, while for self-employed people it was 58.7 per cent (Manchester, 1999, pp. 302-303). In Japan, in 1997, 7.5 per cent of firms required to register with a social insurance scheme covering self-employed and unemployed workers failed to do so and 8.2 per cent of those who did register had not made contributions for the preceding two years (Gillion et al 2000, p. 253). In contrast, Singapore has the most enviable record with only 0.65 per cent of employers estimated to have defaulted payment for more than two months in 1999 (Gillion et al 2000, p. 253).

The extent of employer non-compliance tends to be much worse in developing and transitional economies because employers lack awareness of their obligations, penalties for non-compliance are not imposed, or because penalties that are mandated are insufficient to compel employers to meet their responsibilities (Bailey and Turner, 2001). In Latin America employer compliance varies between 45 per cent of those registered in Peru to 72 per cent in Uruguay (Mesa-Lago 1997, 1998, Queisser 1998). The ILO estimates that through the mid 1990s, in Central and Eastern Europe the non-collection of mandated contributions amounted to between 20 and 30 per cent, which has decimated the sophisticated social protection regimes that had characterised the former socialist states. This was made much worse by the Russian financial crisis in mid-1998 which caused evasion to increase from 26 per cent to 53 per cent (Cichon, 1999).

### **Reasons Employers Engage in Contribution Evasion**

Employer contribution evasion can be induced by a lack of willingness on the part of employees to pay or report non-payment to authorities, illegal behaviour or mismanagement on the part of employers, government tolerance of evasion, or incapacity on the part of the state to enforce its mandate. Gillion et al (2000, p. 256) have concluded that evasion can only be sustained if three conditions coincide:

- employers wish to evade, or place a low priority on making social security contributions relative to other expenses;
- employees prefer non-payment of contributions, are reluctant to report non-payment to authorities or are unaware of the non-payment; or
- government enforcement tolerates evasion or is inadequate to prevent it.

Employers may evade paying social security contributions in order to reduce their labour costs and it is reasonable to expect that this activity will be greatest amongst financially weak enterprises. However, more prosperous firms may choose to evade their contributions in order to maximise their profits and this is a choice likely to be particularly prevalent during times of high inflation when simply delaying payments can generate high returns. It is also to be expected when workers are ill-informed of employer practices or are willing to collude with non-compliance either because they fear the cost of insisting employers comply is not worth the cost of complaining or because they believe that there is nothing to be gained by complaining to the employer/union or informing the authorities. The worst form of evasion is direct fraud where employers collect contributions but keep them or delay payment for long periods in order to reap the interest. However, it is not the case that all evasion is a consequence of maleficent behaviour. The complexity of the prevailing

regime may be a significant cause of evasion as might poor employer record keeping (McGillivray 2001).

Employer evasion may also be a consequence of government tolerance, unwillingness to impose effective penalties, or incapacity to contain its occurrence. The reasons that governments fail to fully enforce compliance can be divided into attitudes, resources and costs (Gillion et al 2000, pp. 265-269). Attitudes towards compliance policy can be a critical factor determining the viability of a social protection regime. Some social security administrators do not take evasion seriously because they perceive their role to be helpers to firms rather than law enforcers. This attitude may be especially prevalent where it is believed enforcement is likely to have adverse implications for the economy or will endanger the existence of poorly functioning firms. As Gillion et al (2000, p. 265) note: "Government officials often believe that it is better for an employer to provide employment without social security contributions than not to provide employment." Similarly, enforcement agencies might not impose the law because officials believe it wrong to compel some firms to comply while others are able to evade and/or because the enforcement officer believes the offence does not warrant the penalty.

Other factors, identified by Gillion et al (2000) as explaining government non-enforcement, include political influence on the part of employers, bribery, an ineffective division of responsibility between those charged with collecting and enforcing the collection of contributions, a shortage of trained enforcement officers or inspectors, and an underdeveloped court system. Where the costs associated with enforcement are high, as is the case in developing countries because the informal sector is larger and record keeping by business is not well developed: "Well-designed enforcement programmes first attempt to collect revenue from sources where collection costs are low. Attempts to further reduce contribution evasion will involve extending enforcement to areas where collection costs are higher" (Gillion et al 2000, p. 266). In this case governments may simply calculate that the costs involved do not outweigh the expected benefits.

### **Combating Evasion**

Three significant overviews of the strategies that governments can adopt to combat employer contribution evasion have been published in recent years (Manchester 1999, McGillivray 2001, Bailey and Turner 2001). However, McGillivray (2001, p. 14) notes that whatever strategy or mix of strategies is embraced, it is vital to remember that all strategies are contingent on social security organisations having the statutory authority required for effective enforcement. "If government does not grant a social security organization the necessary authority, the commitment of the government to the social security programme is in question, enforcement will be hampered and ineffective, and benefit expectations will not be met." At the very least, McGillivray (2001) adds, social security organisations must have the right to inspect employer records and have unfettered access to ancillary data such as employers' bank accounts from which estimates of accrued dues can be calculated. Further, they must have the right to assess and collect contributions due and unpaid and assess enforceable penalties with social security debts having priority over other creditors and the possibility of attachment of employer assets. Armed with these statutory instruments, social security organisations can take a number of steps to enforce compliance. These may include:

- streamlining of administrative procedures by simplifying contribution regulations and reporting and remitting procedures;
- strengthening of enforcement through focused and timely inspections;
- enforcing punitive but realistic penalties for evasion;
- undertaking public relations campaigns to encourage compliance;

- reporting regularly to workers on contributions paid by them and on their behalf so they can verify proper remittance and recording has occurred;
- collecting all contributions at the same time so insurances likely to generate more immediate benefits are mixed in with those that are long-term ;
- remedying scheme design deficiencies which encourage evasion;
- coordinating verification and enforcement activities with tax collection agencies;
- declaring amnesties to encourage evading employers to comply in the future.

## **EMPLOYER COMPLIANCE MANAGEMENT IN SHANGHAI**

Prior to the introduction of market-oriented reforms, China's social security system was characterised by separation of urban and rural areas and segmentation of urban enterprises based on their ownership status. As private industry was negligible before the economic reform, no social security programs existed in the private sector. The system in urban areas was predominantly a danwei-based (organisation-based), defined-benefit, pay-as-you-go type, primarily covering the employees in the public sector such as state-owned enterprises (SOEs). Coverage was comprehensive, including pension insurance; free health services and paid sickness leave; insurance for injury, disability or death irrespective of whether they were work-related; maternity benefits; funeral subsidies; health insurance and death subsidies for dependents of employees (see Wang, 2001). As a consequence, each organisation in the public sector, such as SOEs, operated like a small society, providing not only social security but also hospitals, housing, schools and retail outlets for their employees (Roy and Chai 1999). However, the danwei-based welfare system proved problematic for the public sector and non-existent for the private sector with the introduction of market reforms and the opening up of the economy in the lead-up to China joining the World Trade Organisation (WTO).

When attention turned to how to make SOEs more competitive in the global market place it was soon appreciated that the danwei-based welfare system impeded the development of the service sector, hindered labour mobility and represented a huge financial burden on SOEs. The two major reasons for the rapid increase in social welfare expenditure in the 1980s and first half of the 1990s were rising medical costs and an aging population. The pressure this placed on the public sector meant that several SOEs facing dire financial straits were unable to meet their traditional commitments. In some provinces, such as Guangdong, this phenomenon occurred as early as 1984 (Saunders and Shang, 2001), but it became widespread throughout China from the mid - 1990s.

In response to this mounting financial pressure the state has adopted a series of social welfare reforms. These reforms have centred on the implementation of a number of social insurance programs designed to cover the major risks confronting individuals working in both public and private sectors in a market economy (Saunders and Shang 2001; Zhu 2002, Whiteford 2003). The new social insurance regime has been described as establishing an institutional welfare state (Titmuss 1974) underpinned by welfare pluralism (Gu 2001). This signifies that the new social insurance system is financed by individuals, enterprises and government with two major objectives. One is to alleviate enterprises in the public sector of the full responsibility for welfare provision and ensure that the burden is shouldered fairly between the major stakeholders. The other is to have the same social security system established in the private sector to protect employees and to contain free riding as many private employers fail to offer their workers any insurance.

In Shanghai, where all the sample firms in this study are located, as in other cities, all firms are required to pay a prescribed amount of social insurance. The national regulations mandate that employers must contribute 20 per cent of the wage bill for pension insurance, although in practice

the amount varies between provinces from 15 per cent to 30 per cent. In Shanghai prior to 2001 enterprises were required to pay 25.5 per cent of the previous year's payroll for pension insurance and this contribution rate was reduced to 22.5 per cent in January 2001. Employers are also required to contribute 12 per cent of payroll for health insurance (this rate was 5.5 per cent before 2001), 2 per cent of payroll for unemployment insurance and 1 per cent of payroll for each of industrial injury and maternity insurance (Whiteford 2003). In Shanghai if average wages in the firm are less than 60 per cent of average wages in Shanghai, the firm's social insurance obligations are levied on 60 per cent of average wages in the city. If average wages in the firm are greater than three times the average wage in the city, the firm's social insurance obligations are capped at three times the average wage for the city. These are the minimum prescribed amounts. Firms are also encouraged to take out supplemental commercial insurance over and above these amounts. In China employer non-compliance is a major problem. Suanders and Shang (2001, p. 282) state: "Although reliable data on the extent of non-compliance are difficult to obtain, particularly at the national level, there are concerns that many enterprises are not complying with the new arrangements". Of the audited Shanghai firms analysed in this study 71 per cent of the firms paid less than the prescribed social insurance, 4.7 per cent of firms paid the prescribed amount and 24.3 per cent of firms paid more than the prescribed minimum requirement. A major reason for the high default rate is the lack of an effective enforcement mechanism if firms are audited and found not to have paid.

If a firm is audited and found to have paid less than the prescribed minimum social insurance it will be given 15 days to make the outstanding payment.<sup>1</sup> If the firm then makes the payment within this period this is the end of the matter and there is no further penalty. If the firm does not pay outstanding monies after 15 days the BOLSS charges interest of 0.02 per cent per day and the BOLSS has the power to mortgage property to cover the debt if the firm does not pay after a period of ten months. The Bureau currently has 3 billion RMB in mortgaged property from firms that have failed to pay social insurance, making it the largest landlord in Shanghai. It manages these properties as a portfolio, rather than selling them which has meant that it has benefited from a substantial appreciation in land values in Shanghai since the mid-1990s.

The prospect of a firm getting caught if it is underpaying in Shanghai is quite low. One form of detecting non-compliance is through random audit. Since 2001 the BOLSS has engaged independent auditors to ascertain the total payroll and the numbers of workers employed of a random sample of firms in Shanghai. In 2001, 2600 firms were audited (the sample employed in the empirical analysis below) and in 2002 and 2003, 5000 firms were audited. This, however, is only a small percentage of the 100,000 firms registered in Shanghai. Another method of detecting non-compliance is through an employee hotline, which allows employees to report to the BOLSS if they suspect that their firm is evading social insurance. At interviews we conducted in Shanghai in November 2003, however, the view was expressed that the value of the hotline process is restricted. Several managers in companies expressed the view that if employees are still working at the company they will be reluctant to complain in writing to the BOLSS for fear of losing their job. One manager was of the view that if the complaint is verbal and inspectors come to the firm, the managers in the firm can easily make the complaint "go away" through throwing a lavish banquet and writing it off as an entertainment expense.

Several managers we interviewed in November 2003 also expressed disenchantment about the role of the BOLSS. A recurring theme voiced by managers, consistent with McGillivray's (2001) review of the general literature on employer social insurance compliance discussed above, was the high transaction costs their firms faced in complying with their obligations. Some managers complained the definition of what is included in payroll has become too complex with the emergence of different forms of non-monetary income including subsidies and allowances, making it difficult for them to determine their total payroll. Others complained that the BOLSS was "too bureaucratic" and that there were too many forms. The administrative complexity involved in compliance combined with the fact that the prospect of getting caught is low and that there are no additional penalties if the firm is caught and then pays what it should have paid in the first place means that for many firms it is worth gambling that they will not get caught. To illustrate, the

human resources manager at one firm where we conducted interviews clearly knew the regulations, but the firm chose not to include certain subsidies and allowances it was paying its workers in its reported payroll as part of a conscious strategy to reduce its social insurance liability because the costs if caught were negligible – it would only have to pay what it chose not to pay in the first place.

## **DATA, HYPOTHESES AND METHOD**

### **Data**

In 2001, BOLSS audited 2600 firms in Shanghai to ascertain whether they were making their prescribed social insurance payments. Firms in Shanghai were not required to contribute to industrial injury insurance, but were required to contribute to the other four insurances – maternity, medical, pension and unemployment in one lump sum. The enterprises are a representative range of firms drawn by stratified random sampling from the population available to the BOLSS in Shanghai.

### **Hypotheses**

We test three hypotheses about why firms pay social protection insurance drawing on the work of Mares (2002, 2003). Mares suggests that the willingness of a firm to discount the financial burden imposed by social policy in exchange for the institutional advantages provided by the welfare state depends on the firm's skill profile, size, and the incidence of risk facing its employees. We do not have skill profile data, but are able to test the effect of size and the incidence of risk on firm behaviour. We also test the effect of ownership on employer responses.

#### ***H1: The Size of the Firm Will Have an Impact on Contributions to Prescribed Social Security and the Taking out of Supplemental Insurance over the Prescribed Amount.***

The costs of social policies will form a lower proportion of the total labour costs of large firms relative to small firms. Size is a good predictor of market power. Because larger firms have more market power, they will have a greater capacity than small firms to shift an increase in non direct-wage costs onto consumers in the form of higher prices (Mares 2003, p. 239). Facing tougher financial constraints, small firms will have a lower capacity to meet their compulsory social protection obligation and little ability to contribute to private social policies such as supplemental social insurance, even if the firm might potentially derive advantage from such policies (Mares, 2002, p. 196).

Alternatively, while large firms might have more capacity than small firms to pay social insurance, large firms may have more incentive to evade because the social insurance contributions of large firms will be more than small firms in absolute terms. Moreover, there is an argument that the incentive to evade is more likely to be proportional to the returns from evasion with a monitoring and penalties structure such as exists in Shanghai where the probability of being caught is relatively low and the penalties if caught are lenient. With social insurance evasion there is asymmetric information – ex ante the firm knows if it is evading its social insurance obligations, but the enforcement agency does not. It is reasonable to suppose that the extent of the asymmetry between the enforcement agency and firm is proportional to the size of the firm, suggesting there could be economies of scale and scope in social insurance evasion. One would expect a larger firm to have more resources in the form of accountants and lawyers which it could use to better disguise its evasion activities and deal with the enforcement agency. Often large firms will be “repeat players” meaning that they routinely deal with government agencies making the transactions costs of doing so low relative to small firms who will usually be “one shotters” who do not have the same experience or resources to commit to such activities (see Galanter, 1974).

## ***H2: There Will be a Positive Relationship between the Incidence of Risk Facing Employees of a Firm and the Firm's Willingness to Contribute to Social Insurance.***

An increase in the incidence of risk will increase the net benefit of risk redistribution for the individual firm. Firms characterized by a high incidence of risk to their employees are more likely to support social insurance policies, which redistribute the risk (Mares, 2002, pp. 193-194, 2003, p. 241). Incidence of risk in this sense depends on the profile of the workforce in an industry. We hypothesize, based on Mares, that:

- Industries with an aging workforce will be more willing to contribute to social insurance which redistributes the risk of old age to industries with a younger workforce. Because older workers are also likely to have more health problems, industries with an aging workforce may be also more likely to want to contribute to social insurance in order to redistribute the risk of poor health.
- Industries with a high proportion of young females of child bearing age will be more willing to contribute to social insurance, which redistributes the risk that a disproportionate amount of their workforce will take maternity leave.
- Industries with a high risk of unemployment will want to redistribute the risk of unemployment to industries with relatively low levels of unemployment.

## ***H3: The Incidence of Risk Confronting the Firm Will Vary between Ownership Types. State-Owned Enterprises Will Confront a Higher Incidence of Risk than Other Ownership Types.***

SOEs have inherited heavy pension burdens from the central planning era. With the transition to the market economy, employment in the state-owned sector is declining, while the number of pensioners is increasing. The ratio of pensioners to workers in SOEs increased from 16.4 per cent in 1985 to 37.1 per cent in 2000 and is expected to increase to 49.1 per cent in 2020 (Zhang et al 2000). In many cases, in particular where there is a high proportion of SOEs in sunset industries in the North East, the ratio of pensioners to workers is already over 100 per cent (World Bank, 1997, p.2). In case studies conducted by Zhu and Nyland (2004) in 2001 in Shanghai they also reported that in two SOEs the average age of employees were 41 and 45 years and the ratio of current employees to retirees in 2000 was 1:1 and 1:1.78 respectively. The cost of pensions relative to the wage bill in SOEs increased from 16 per cent in 1985 to 34.4 per cent in 2000 and is projected to further increase to 46.1 per cent by 2020 (Zhang et al 2000). Other ownership forms such as private firms, foreign-owned firms and joint ventures do not face these same financial obligations to an aging workforce (see e.g., Zhu and Nyland, 2004), which lowers the benefits to these firms from high-risk redistribution.

SOEs also have a higher risk of unemployment than other ownership forms. Traditionally, there has been a high level of hidden unemployment in SOEs. A 1994 World Bank study (cited in Saunders and Shang 2001) concluded that almost 85 per cent of SOEs had employment levels above the optimal level. More recently, in 1997, the State Commission for Economic Restructuring estimated that the number of surplus workers in SOEs was 54 million, close to half the total workforce (cited in Morris et al 2001, p. 600). This figure is broadly consistent with case studies of large SOEs in the South-West and North East of China, which have found that surplus labour is between 10 and 60 per cent of total employees (Kuehl and Sziraczki 1995, p. 75, Morris et al 2001, pp. 699-700). In the face of increasing pressure to become more competitive, SOEs have laid off large numbers of workers through giving them the administrative tag *xiagang*, meaning they are "on leave" from the enterprise. These workers retain their ties with the enterprise and the enterprise is obliged to pay them a subsistence allowance. According to official figures there were 26 million workers laid off between 1998 and 2002 (Armitage 2003) and this figure will increase with the financial pressure on SOEs to become more competitive following China's accession to the WTO. Under these circumstances SOEs will want to redistribute the risk to other ownership forms.

The unionisation of the workforce is another consideration as union presence has been strongest in SOEs, meaning workers in SOEs will often be more familiar with the requirements of firms to pay social insurance than in firms where there is little or no union presence and be better placed to demand their rights. This may also have a spillover effect as was revealed by one human resources manager of a foreign firm we interviewed that recruits its skilled labour from SOEs. She reports that because these workers had been employed in the state sector they were very much aware of their entitlements. An amendment to the Trade Union Law (2001) granted legal rights to unions to formally monitor workplaces and precipitated a campaign to increase levels of unionisation across ownership forms. The expanded role for unions is outlined in the All China Federation Trade Union's Blue Paper published in January 2003. The Paper touches on the protection of workers' rights in nine areas (ACFTU, 2003). The expanded role for unions in other ownership forms, however, to a large extent has only occurred since 2001 when the firms in our study were audited.

An offsetting consideration is that there will be a positive relationship between the financial position of a firm and the firm's willingness to contribute to social insurance. This qualifies the third hypothesis. It is conceivable that in China firms facing the highest incidence of risk are the least able financially to insure their employees. Reports from official publications of the Ministry of Labour and Social Security in China indicate that the majority of defaulters on social insurance payments are in old industrial bases with large numbers of SOEs which do not have the financial resources to meet the prescribed contributions (see eg Ma 2002, Wang 2001, Zhang and Zhen 2002). To illustrate, one report notes that in Guangdong at the end of June 2001, overdue social security contributions owed by enterprises totalled RMB 4.05 billion; of which, RMB 3.5 billion was for pension premiums. The report went on to point out that the overdue amount in Guangzhou, Zhanjiang, Maoming, Huizhou and Shaoguang, which are old industrial cities with high concentrations of SOEs, was RMB 2.4 billion, accounting for approximately 60 per cent of the total overdue amount in Guangdong (Wang, 2001).

## Method

We employed ordered probit regression using a 3-level dependent variable: (1) firm pays less than the prescribed social insurance contribution, (2) firm pays the exact prescribed social insurance contribution or (3) firm pays more than the prescribed social insurance contribution.

To test hypothesis 1 on the effect of size on contribution behaviour we used the number of the firm's employees. To test hypothesis 2 on the effect of the incidence of risk on payment behaviour we used a dummy variable for 12 industries with the manufacturing industry taken as the reference category. Table 1 provides statistics on the distribution of female employment and urban unemployment by industry in China. The manufacturing sector accounts for about one third of female employment and just under one quarter of urban unemployment in China. The figures in Table 1 are consistent with widespread documentation by the World Bank, among others, that women in China are overrepresented in low income occupations such as manufacturing and underrepresented in high income professions such as banking and real estate (World Bank, 2002 and references cited therein). While it is difficult to provide statistics on age profiles across industries, casual observation suggests that manufacturing also has an aging workforce relative to most of the other industries represented in Table 1.

-----  
Table 1 about here  
-----

The information in Table 1 and the observation on age profiles is for China as a whole, but Shanghai is fairly typical of China in this respect. The manufacturing sector in Shanghai, and in particular the textile sector, has an aging workforce, employs a disproportionate number of young females of childbearing age and has high rates of unemployment resulting from restructuring of SOEs (Howell, 2002). As a consequence of enterprise restructuring in the first half of the 1990s,

240,000 employees in Shanghai's textile industry, or roughly half of its workforce as of 1992, were reportedly laid-off by 1996 (Moore 2002, p. 129). Because of the demographic profile of the manufacturing sector and high rates of unemployment, consistent with hypothesis 2, we expect the manufacturing industry to support social insurance policies, which redistribute the risk.

To test hypothesis 3 we use dummy variables for five ownership categories: SOEs, collectively-owned enterprises (COEs), shareholding firms, private firms and foreign invested enterprises (FIEs). For FIEs, the data set allows us to distinguish between firms from "Greater China" (Hong Kong, Macau and Taiwan) and firms from either Europe or the USA with firms from all other countries grouped together as "other FIEs".<sup>2</sup> Because the third hypothesis focuses on the social security payment behaviour of SOEs relative to other ownership forms we treat SOEs as the reference category.

## FINDINGS AND DISCUSSION

Tables 2 - 4 give an overview of social security payment behaviour of firms in the sample according to industry, ownership and size. Focusing on industries with at least 10 firms in the sample, Table 2 suggests that firms in electricity, gas and water, banking, and real estate had the highest default rates. At the other end of the spectrum, more than one quarter of firms in education, arts and broadcasting, transportation, wholesale and retail and social services paid more than the prescribed amount of social insurance. Table 3 describes social security compliance in the sample firms according to ownership. Private firms and SOEs had the lowest default rates, while also having the highest proportion of firms which paid more over prescribed social security contributions. Table 4 describes the payment behaviour of firms according to size. The three categories with the highest default rates were the large firms; namely, firms with 200 to 299 employees, 300 to 499 employees and over 500 employees.

-----  
Tables 2 - 4 about here  
-----

Table 5 presents the results from the ordered probit regression of employer social security payment behaviour on firm size, industry and ownership type. The results do not support the hypothesis that larger firms will be more likely to make the prescribed social security contributions or take out supplemental insurance over the prescribed amount than small firms. The coefficient on number of employees is negative and it is statistically significant at 5 per cent. These results are consistent with the alternative hypothesis that while large firms might be more able to pay social insurance, large firms may have more incentive to engage in evasion.

-----  
Table 5 about here  
-----

In terms of industry type, firms in banking, construction and real estate are significantly more likely to engage in non-compliance with social security obligation than firms in manufacturing. This is consistent with the descriptive statistics in Table 2, with these industries having amongst the highest default rates. The coefficient on the electricity, gas and water industry, which has the highest default rate in Table 2, is statistically insignificant. Banking, electricity, gas and water and real estate are high wage industries that employ a relatively small proportion of females and account for a small proportion of urban unemployed relative to manufacturing (see Table 1).

The average wage in these sectors in Shanghai is the highest in China and within Shanghai are approximately 80 per cent more than the average paid in manufacturing. For example, the average salary in Shanghai in banking in 2001 was RMB35051 while in manufacturing it was RMB20406 (SSB, 2002a). This wage differential may well be a critical factor in explaining why

firms in these high wage industries have a high rate of non-compliance. This is a probability driven home to the authors by the managers interviewed in Shanghai who revealed strong resistance to the notion that benefits should be the same for all workers when high wage employees have to pay up to three times the average contribution and receive no extra benefit. In an environment in which there is little penalty placed on firms if they are caught not meeting their obligations, this perspective is likely to be important. It means high wage employees have little reason to report employers who do not pay above the level required to ensure the worker gains the common benefit. Indeed if the employer is willing to share the proportion of the premium not paid with the worker the employee may have a decided interest in colluding in avoidance. In Shanghai high wage industries confront an environment in which the employer who responds to economic incentives will be motivated to reduce the premium paid and the worker has little economic motivation to report non-compliance. Indeed, if workers accept that there should be a close association between what is paid by the employer and what the worker receives the employee may collude in employer non-compliance even if the employee does not gain a share of the benefit that accrues to the employer. These wage pressures will compound the effect of the differing age and physical demand profiles across industries (Brown 2003). In short, there is a direct wage incentive not to comply and there is also a lower rate of risk incidence and the latter indirectly supports hypothesis 2 that firms will be less willing to contribute to social insurance when they are in industries with a lower incidence of risk.

The results for the construction industry are interesting. This industry has the highest rate of industrial accidents in developing countries (ILO 2001). In China accidents in the construction sector are one of the major causes of workplace injuries and deaths, with an estimated 3000 deaths per annum (ILO 1998). In this respect, the incidence of risk to the firm, in the sense Mares (2002) uses the term, in the construction industry is high and one would expect firms in this sector to want to redistribute this risk. However, in 2001 firms in Shanghai did not contribute to industrial injury insurance (which only became operative in January 2004) so this was not a relevant risk.

Our findings for the construction sector reflect that it is one of the biggest employers of migrant labour and other temporary workers in Shanghai. At the interviews we conducted in Shanghai in November 2003 it emerged that often firms will employ migrant workers to avoid paying social insurance. Migrant workers will often be less aware of their rights or less willing to enforce those rights because of low job security. While firms in many industries which employ unskilled labour do not pay social insurance to migrant workers, this is particularly true in the construction sector given the disproportionate number of migrant labourers which it employs.

The results for the ownership dummies provide mixed support for the third hypothesis. The coefficient on the shareholding dummy variable is statistically significant with a negative sign, suggesting that shareholding firms are less likely to pay social insurance than SOEs. The coefficient on COEs and private firms is statistically insignificant. The coefficient on Hong Kong, Macau and Taiwanese firms and "other FIEs" is statistically significant with a negative sign. This is consistent with the descriptive statistics in Table 3 which suggest that along with shareholding firms, firms from Hong Kong, Macau and Taiwan and "other FIEs" have the highest rates of default.

An interesting feature of Table 3, which is borne out in the ordered probit regression results, is that firms from Europe and the United States have lower rates of default than other FIEs, although their default rate is still higher than private firms and SOEs. This is generally consistent with anecdotal evidence from the interviews we conducted and other sources such as Chan (2001), which suggest that firms from Hong Kong, Macau, Taiwan and other Asian countries (excluding Japan) are less likely to pay social insurance than firms from Europe or the United States. However, it is difficult to be definitive on this point because the data set does not allow us to distinguish between firms from Europe and the United States and does not provide any breakdown of origin for firms from other countries other than those from Hong Kong, Macau and Taiwan.

## **CONCLUSION**

This study has explored the statistical associations between revealed employer social protection behaviour and core features of business firms. Our research findings do not support the first hypothesis that large firms should pay more social insurance, but provide mixed support for the second and third hypotheses. Further statistical analysis, which will become possible as the BOLSS in Shanghai generates further data, is needed to check the robustness of these initial findings. Most importantly the availability of longitudinal data will reveal if the new commitment to compliance enforcement, represented by the adoption of an auditing process, is having a positive impact.

In terms of future research, to further test the second hypothesis we need to analyse the auditing data to be collected at the end of 2004 after implementation of the industry workplace injury insurance policy. It will be interesting to see what effect this has on industries such as construction which have a high rate of industrial injuries. We also need to investigate the low compliance of FIEs and shareholding firms identified in this study. Case studies will need to be undertaken to determine the impact of the new compliance mechanisms on firms with different countries of origin. These results should be useful in helping regulators specify the type of firms that are likely to support or frustrate government social protection efforts, and contribute to building a theory of social protection that can explain when, why and how social policy matters to employers.

## REFERENCES

- All China Federation of Trade Unions (ACFTU) (2003). Blue Paper on the Protection of the Legitimate Rights and Interests of Workers by Chinese Trade Unions, January <<http://www.acftu.org/m8.jsp?lmbh=7&bh=468>>
- Armitage, C. (2003), 'China's "iron rice bowl" gets the chop' Australian, January 13, p. 12.
- Asian Development Bank, (ADB) (2002), Social protection: reducing risks, increasing opportunities, <http://www.adb.org/SocialProtection/default.asp>.
- Bailey, C. and J. Turner (2001), 'Strategies to reduce contribution evasion in social security financing', *World Development*, 29: 385-93.
- Brown, G. D. (2003), 'China's factory floors: an hygienists' view', *International Journal of Occupational and Environmental Health*, 9: 326-39.
- Chan, A. (2001), *China's Workers Under Assault: The Exploitation of Labour in a Globalizing Economy*, Armonk NY: M.E. Sharpe.
- Cichon, M. (1999), 'In the eye of the storm: the Russian social protection system amidst multiple crises', Unpublished Manuscript, ILO, Geneva.
- Cook, S. (2002), 'From rice bowl to safety net: insecurity and social protection during China's transition', *Development Policy Review*, 20: 615-35.
- Friedman, S. and D. Jacobs (2001), *The Future of the Safety Net: Social Insurance and Employee Benefits Campaign*, IL: Industrial Relations Research Association.
- Galanter, M. (1974), 'Why the haves come out ahead: speculation on the limits of legal change', *Law and Society Review*, 9: 95-160.
- Gillon, C., J. Turner, C. Bailey and D. Latulippe (2001), *Social Security Pensions: Development and Reform*, Geneva: ILO.
- Gu, E.X. (2001), 'Dismantling the Chinese mini-welfare state? marketization and the politics of institutional transformation, 1979-1999' *Communist and Post-Communist Studies*, 34: 91-111.
- Hirst, P. and G. Thompson (1999), *Globalization in Question*, Cambridge, Mass: Polity Press.
- Howell, J. (2002), 'Good practice study in Shanghai on employment services for the informal economy', Working Paper on the Informal Economy, Employment sector, International Labour Office, Geneva.
- International Labour Organization (ILO) (1998), *China: Promoting Safety and Health in Township and Village Enterprises*. ILO Regional Office for Asia and the Pacific, Bangkok available at: <<http://www.ilo.org/public/english>>.
- International Labour Organization (ILO) (2001), *The Construction Industry in the 21<sup>st</sup> Century: Its Image, Employment Prospects and Skill Requirements*, Geneva: ILO.
- Jordan, B. (1998), *The New Politics of Welfare: Social Justice in a Global Context*, London: Sage.
- Kuehl, J and G. Sziraczki (1995), 'Employment restructuring at the micro-level: results of the Dalian pilot enterprise survey' In L.L. Lim and G. Sziraczki (eds.) *Employment Challenges and Policy Responses: Chinese and International Perspectives*, Beijing: International Labour Office, Area Office, Beijing.
- Ma, Y. (2002), 'Don't let contribution debt become a chronic and stubborn disease', *China Labour and Social Security News*, No. 2576, August 22.
- Manchester, J. (1999). 'Compliance in social security systems around the world', in O.S. Mitchell, R.J. Myers and H. Young (eds.) *Prospects for Social Security Reform*, Philadelphia: University of Pennsylvania Press.

- Mares, I. (1997), 'Is unemployment insurable? employers and the development of unemployment insurance', *Journal of Public Policy*, 17: 299-327.
- Mares, I. (2002), 'Firms and the welfare state: when, why and how does social policy matter for employers' in P. Hall and D. Soskice (eds.) *Varieties of Capitalism*, Oxford: Oxford University Press.
- Mares, I. (2003), 'The sources of business interests in social insurance: sectoral versus national differences', *World Politics*, 55: 229-58.
- McGillivray, W. (2001), 'Contribution evasion: implications for social security pension schemes', *International Social Security Association*, IPD -01/01.
- Mesa-Lago, C. (1997), 'Comparative analysis of structural pension reform in eight Latin American countries: description, evaluation and lessons' in M. Pierce (ed.) *Capitalization: The Bolivian Model of Social and Economic Reform*, La Paz, Bolivia: Ministerio de Capitalizacion.
- Mesa-Lago, C. (1998), 'Comparative features and performance of structural pension reforms in Latin America', *Brooklyn Law Review*, 64: 771-93.
- Moore, T. (2002), *China in the World Market: Chinese Industry and International Sources of Reform in the Post-Mao Era*, Cambridge: Cambridge University Press.
- Morris, J, J. Sheehan and J. Hassard (2001), 'From dependency to defiance? work unit relationships in China's state enterprises', *Journal of Management Studies*, 38: 697-717.
- Queisser, M. (1998), *The Second Generation Pension Reforms in Latin America*, Paris: OECD.
- Rieger, E. and S. Leibfried (1998), 'Welfare limits to globalization', *Politics and Society*, 26: 52-87.
- Rodrick, D. (1999), *The New Global Economy and Developing Countries: Making Openness Work*, Washington DC: Overseas Development Council.
- Rodrick, D. (2001), 'Trading in illusions', *Foreign Policy*, March/April, 54-62.
- Roy, K.C. and J.C.H. Chai (1999), 'Economic reforms, public transfers and social security nets for the poor: a study of India and China', *International Journal of Social Economics*, 26: 222-38.
- Saunders, P. and X. Shang (2001), 'Social security reform in China's transition to a market economy', *Social Policy and Administration*, 35: 274-89.
- Scharpf, F.W. (2000), 'The viability of advanced welfare states in the international economy: vulnerabilities and options', *Journal of European Public Policy*, 7: 190-228.
- State Statistical Bureau (2001), *China Labour Statistical Yearbook 2001*, Beijing: State Statistical Bureau.
- State Statistical Bureau (2002), *China Statistical Yearbook 2002*, Beijing: State Statistical Bureau.
- State Statistical Bureau (2002a), *China Social Security Yearbook 2002*, Beijing: State Statistical Bureau.
- Stiglitz, J. (1999), 'Responding to economic crises: policy alternatives for equitable recovery and development', *The Manchester School*, 67: 409-28.
- Tanzi, V. (2002), 'Globalization and the future of social protection' *Scottish Journal of Political Economy*, 49: 116-27.
- Titmuss, R.M. (1974), *Social Policy: An Introduction* London: Allen & Unwin.
- Wang, S. (2001), 'A tough war for Guangdong to tackle overdue social insurance contributions', *China Labour and Social Security News*, No. 2330, September 13.
- Whiteford, P. (2003), 'From enterprise protection to social protection: pension reform in China', *Global Social Policy*, 3: 45-77.

- World Bank (1997), *China 2020: Pension Reform and China's old-Age Security*, Washington DC: World Bank.
- World Bank (2001), *From Safety Net to Springboard*, Washington DC: World Bank.
- World Bank (2002), *China: Country Gender Review*, East Asia Environment and Social Development Unit, Washington DC: World Bank.
- Zhang, J., J. Chen and H.J. Rosner (2000), 'Current and future problems of capital accumulation in the Chinese pension system', *International Social Security Review*, 53: 37-48.
- Zhang, L. and Y. Zhen (2002), 'An analysis of the reasons why firms default on their retirement insurance premium payments', *China Labour and Social Security News*, No. 2522, June 20.
- Zhu, Y. (2002), 'Recent developments in China's social security reforms', *International Social Security Review*, 55: 39-54.
- Zhu, C. and C. Nyland (2004), 'Marketization, globalization and social protection reform in China: implications for the global social protection debate and for foreign investors', *Thunderbird International Business Review* (in press).

**Table 1: Female Employment and Urban Unemployment by Industry in China**

Industry	Female Employment in Specific Industries as a Percentage of Total Female Employment 2000	Urban Unemployment in Specific Industries as a Percentage of Total Urban Unemployment 2001
Agriculture	4.4	3.6
Mining and Quarrying	3.5	1.5
Manufacturing	32.3	23.5
Electricity/Gas/Water	2.1	1.4
Construction	3.3	4.4
Geological Exploring and Water Management	0.7	0.6
Transportation, Logistics, Post and Telecommunications	4.4	5.8
Wholesale and Retail	10.5	17.3
Banking	3.2	1.4
Real Estate	0.8	1.3
Social Services	11.1	21.3
Education, Arts and Broadcasting	15.6	1.1
Scientific Research	1.3	0.5
Government Agencies, Party Agencies and Social Organizations	6.1	1.3
Other	0.7	15.0

Source: Female employment distribution SSB (2001, pp. 17-18); Urban unemployment distribution SSB (2002, pp. 162-163).

**Table 2: Social Security Compliance of Sample Firms by Industry, 2001**

Industry	Firms in Sample	Paid Less than Prescribed Amount		Paid the Prescribed Amount		Paid More than Prescribed Amount	
Geological Exploring and Water Management	2	1	(50.00)	0	-	1	(50.00)
Electricity/Gas/Water	27	21	(77.77)	2	(7.41)	4	(14.81)
Real Estate	161	125	(77.6)	7	(4.35)	29	(18.01)
Construction	89	66	(74.16)	7	(7.87)	16	(17.98)
Transportation, Logistics, Post and Telecommunications	129	90	(69.77)	6	(4.65)	33	(25.58)
Education, Arts & Broadcasting	13	9	(69.23)	0	-	4	(30.77)
Banking	80	61	(76.25)	1	(1.25)	18	(22.50)
Scientific Research	63	46	(73.02)	3	(4.76)	14	(22.22)
Agriculture	9	7	(77.77)	0	-	2	(22.22)
Wholesale and Retail	416	272	(65.38)	24	(5.77)	120	(28.85)
Social Services	253	177	(69.96)	9	(3.56)	67	(26.48)
Manufacturing	992	711	(71.67)	47	(4.73)	234	(23.59)
TOTAL	2,234	1,586	(70.99)	106	(4.74)	542	(24.26)

Note: Figures in parentheses are percentages.

**Table 3: Social Security Compliance of Sample Firms by Ownership, 2001**

<b>Ownership</b>	<b>Firms in Sample</b>	<b>Paid Less than Prescribed Amount</b>		<b>Paid the Prescribed Amount</b>		<b>Paid More than Prescribed Amount</b>	
SOEs	979	646	(65.99)	51	(5.21)	282	(28.80)
COEs	316	215	(68.04)	13	(4.11)	88	(27.85)
Shareholding	64	52	(81.25)	1	(1.56)	11	(17.19)
Private	174	106	(60.92)	16	(9.20)	52	(29.89)
Firms from HK/Macau/ Taiwan	94	77	(81.91)	4	(4.26)	13	(13.83)
Firms from Europe/US	136	97	(71.32)	7	(5.15)	32	(23.53)
Other FIE	471	393	(83.44)	14	(2.97)	64	(13.59)
<b>TOTAL</b>	<b>2,234</b>	<b>1,586</b>	<b>(70.99)</b>	<b>106</b>	<b>(4.74)</b>	<b>542</b>	<b>(24.26)</b>

Note: Figures in parentheses are percentages.

**Table 4: Social Security Compliance of Sample Firms by Size, 2001**

<b>Number of Employees</b>	<b>Firms in Sample</b>	<b>Paid Less than Prescribed Amount</b>		<b>Paid Prescribed Amount</b>		<b>Paid More than Prescribed Amount</b>	
<20	69	47	(68.12)	0	-	22	(31.88)
20-49	173	118	(68.21)	3	(1.73)	52	(30.06)
50-99	721	509	(70.60)	44	(6.10)	168	(23.30)
100-149	386	274	(70.98)	19	(4.92)	93	(24.09)
150-199	204	141	(69.12)	7	(3.43)	56	(27.45)
200-299	224	160	(71.42)	6	(2.68)	58	(25.89)
300-499	230	171	(78.70)	16	(6.96)	43	(14.35)
Over 500	227	166	(74.34)	11	(4.85)	50	(22.03)
<b>TOTAL</b>	<b>2,234</b>	<b>1,586</b>	<b>(70.99)</b>	<b>106</b>	<b>(4.74)</b>	<b>542</b>	<b>(24.26)</b>

Note: Figures in parentheses are percentages.

**Table 5: Ordered Probit Regression of Employer Social Security Payment Behaviour**

<b>Variable</b>	<b>Ordered Probit Estimates</b>	
COEs	-0.093	(1.091)
Shareholding	-0.497*	(2.632)
Hong Kong/Macau/Taiwanese firms	-0.549*	(3.544)
Europe/US firms	-0.199	(1.626)
Other FIE	-0.606*	(7.092)
Private	-0.080	(0.815)
Geological Exploring and Water Management	0.331	(0.366)
Electricity/Gas/Water	-0.423	(1.616)
Real Estate	-0.326*	(2.722)
Transport, Logistics, Post & Telecommunications	-0.028	(0.222)
Education, Arts and Broadcasting	-0.014	(0.037)
Banking	-0.329***	(1.893)
Scientific Research	-0.175	(0.999)
Agriculture	-0.302	(0.633)
Wholesale and Retail	-0.004	(0.054)
Social Services	-0.061	(0.627)
Construction	-0.280***	(1.940)
Number of Employees	-0.0002**	(2.200)
McFadden Pseudo R <sup>2</sup>	0.027	
LR Statistic	88.491*	

Notes:

Figures in parenthesis are z-statistics.

\*(\*\*)(\*\*\*) indicates coefficient is significant at 1%(5%)(10%); \* indicates LR statistic is significant at 1%.

The ordered probit regression was estimated with Huber/White robust standard errors and covariance.

The reference categories for industry type and ownership respectively are manufacturing and SOEs.

## Notes

---

<sup>1</sup> Information obtained from the BOLSS in Shanghai, November 2003.

<sup>2</sup> These are the categories in the BOLSS data set. The BOLSS data set did not allow us to distinguish between firms from Europe or the United States, nor did it separate out other Asian countries.