What Determines the Extent to Which Employers Will Comply With their Social Security Obligations? Evidence From Chinese Firm Level Data

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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 relationship 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 the size of the firm, 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.

Keywords

China, compliance, employer behaviour, social security.

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: 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 who have attempted to explain when, why and how social policy matters to employers have faced is that it is difficult to access 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 relationships 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 the local administrators are seeking to combat contribution avoidance on the part of employers. To achieve this goal we supplement our 2001 dataset used in the quantitative section of the paper and secondary sources with information obtained from interviews at the BOLSS and a select number of firms in Shanghai in November 2003. In total, in 2003, we conducted interviews at eight firms and each interview was conducted with senior management and/or the human resources manager with knowledge of the firm's social insurance policies. We then proceed to test a number of hypotheses using the data set regarding the 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

A primary background 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, costly medical treatment, ageing and other situations that limit people's ability to gain income from work or the ownership of resources (Cook 2002, Friedman and 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 and 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 and magnitude of employer contribution evasion, the

reasons employers evade their responsibilities, and the countervailing strategies available to regulators. We discuss these issues in turn.

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: 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: 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 consequently accurate data concerning its prevalence is difficult to obtain. 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 payments actually made. In the United States 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 the figure was 58.7 per cent (Manchester, 1999: 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 failed to make contributions for the preceding two years (Gillion et al 2000: 253). By

contrast, Singapore has the most enviable record of any country with only 0.65 per cent of employers estimated to have defaulted payment for more than two months in 1999 (Gillion et al 2000: 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: 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: 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: 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 to be 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: 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: 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 increased 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: 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.[1] 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

As indicated above, in 2001, BOLSS engaged independent accountants to audit 2600 firms in Shanghai to ascertain whether they were making their prescribed social insurance payments. In 2001 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. Firms in Shanghai were required to pay the prescribed contribution for the four categories of social insurance in one lump sum. Therefore, there is no separate information on firms' contribution to maternity, medical, pension or unemployment insurance. We obtained the audited information from BOLSS once the identities of the firms had been removed to protect anonymity. Of the 2600 firms in the audit, there was complete information on the amount of social insurance underpaid or overpaid, the number of employees and industry and ownership type for 2234 firms. The enterprises are a representative range of firms drawn by stratified random sampling from the population data 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 data on the skill profile of the firms, 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. We begin by discussing the hypotheses and then proceed to consider the methods used to test the hypotheses.

H1: The size of the firm will affect the extent to which employers comply with their social security contribution obligations.

Firm size could have either a positive or negative effect on employer contribution behaviour. One possibility is that large 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 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: 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: 196).

The alternative possibility is that 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: 193-194, Mares 2003: 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: 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: 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: 75, Morris et al 2001: 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.

While our data set does not contain information of whether there was a union presence in each firm, the unionisation of the workforce is another consideration. Traditionally 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 trade unions to formally monitor workplaces and precipitated a campaign to increase the level of unionisation across ownership forms. The expanded role for trade unions is outlined in the All China Federation Trade Union's Blue Paper published in

January 2003. The Blue Paper touches on the protection of workers' rights in nine areas (ACFTU, 2003). The expanded role for trade 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

To test the hypotheses we ran two regressions, which differed in the treatment of the dependent variable. In the first regression we treated the dependent variable as being ordinal and employed an ordered probit model. In the first regression model the choices facing the firm were defined as: (1) it pays less than the prescribed social insurance contribution, (2) it pays the exact prescribed social insurance contribution or (3) it pays more than the prescribed social insurance contribution. In the second regression we used a Tobit model for over compliance. In the Tobit model, the dependent variable is defined as the amount which is overpaid as a percentage of the firm's wage bill if the firm pays more than the prescribed amount of social insurance; otherwise it is zero.[2]

The explanatory variables in both regressions are proxies denoting each of the hypotheses. 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.

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: 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 United States with firms from all other countries lumped together as "other FIEs".[3] 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

Before presenting the results from the regression analysis, Tables 2-4 give an overview of social security payment behaviour of firms in the sample according to industry, ownership and size. Table 2 breaks down the social security compliance of sample firms according to industry.[4] 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 than the prescribed amount of social security contributions. Table 4 describes the payment behaviour of firms according to size. The three size categories with the highest default rates among the firms audited were the large firms; namely, firms with 200 to 299 employees, firms with 300 to 499 employees and firms with over 500 employees.

Tables 5 and 6 give some basic descriptive statistics on the sample firms and present the results from the ordered probit and Tobit regressions of employer social security payment behaviour on firm size, industry and ownership type.[5] Beginning with hypothesis 1, the results suggest that larger firms will less likely to make the prescribed social security contributions or take out supplemental insurance over the prescribed amount than small firms. In both regressions the coefficient on number of employees is negative and it is statistically significant at 5 per cent in the ordered probit results and at 10 per cent in the Tobit results. These results

are consistent with the perspective on firm size which suggests that while large firms might be more able to pay social insurance compared to small firms, large firms have more incentive to engage in evasion.

Turning to the results for industry type, firms in construction and real estate are statistically significantly less likely to over comply and more likely to engage in non-compliance with their social security obligation than firms in manufacturing. This finding is consistent with the descriptive statistics in Table 2 with both industries having amongst the highest default rates. In terms of risk profile real estate is a high wage industry that employ a relatively small proportion of females and account for a small proportion of the urban unemployed relative to the manufacturing sector (see Table 1).

The average wage in real estate in Shanghai is among the highest in China and within Shanghai it is approximately 80 per cent more than the average paid in manufacturing. This wage differential may well be a critical factor in explaining why firms in real estate 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. The construction 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 either 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 dummies for shareholding, Hong Kong/Macau/Taiwanese, European/US and “other FIE” firms are statistically significant with a negative sign in both the ordered probit and

Tobit models, suggesting that firms in each of these categories are less likely to pay social insurance than SOEs. The coefficient on COEs and private firms is statistically insignificant in both sets of regressions. These results are consistent with the descriptive statistics in Table 3, which indicate that SOEs, COEs and private firms have the lowest rates of non-compliance and, at the same time, have the highest percentage of firms which pay over the prescribed amount of social insurance.

Conclusion

This study has explored the statistical relationship between revealed employer social protection behaviour and core features of business firms. Our research findings support the first hypothesis that firm size affects employer compliance behaviour and we find that large firms are less likely to pay social insurance. Our findings provide mixed support for the second and third hypotheses. Further statistical analysis, which will become possible as the BOLSS in Shanghai generates further data through auditing, 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, we need to analyse the auditing data to be collected at the end of 2004 after the implementation of the industry workplace injury insurance policy to further test the second hypothesis. 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. This said, our 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 the effort to building a theory of social protection that can explain when, why and how social policy matters to employers.

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Table 1:

Distribution of 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

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 and 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	2234	1586	(70.99)	106	(4.74)	542	(24.26)

Note: Figures in parenthesis are percentages.

Table 3:

Social security compliance of sample firms by ownership, 2001

Ownership	Firms in Sample	Paid Less than Prescribed Amount		Paid the Prescribed Amount		Paid More than Prescribed Amount	
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)
TOTAL	2234	1586	(70.99)	106	(4.74)	542	(24.26)

Note: Figures in parenthesis are percentages.

Table 4:

Social security compliance of sample firms by size, 2001

Number of Employees	Firms in Sample	Paid Less than Prescribed Amount		Paid Prescribed Amount		Paid More than Prescribed Amount	
<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)
TOTAL	2234	1586	(70.99)	106	(4.74)	542	(24.26)

Note: Figures in parenthesis are percentages.

Table 5:

Descriptive statistics of sample firms, 2001

	Minimum	Maximum	Mean	Std. Dev.
COEs	0	1	0.1415	0.3486
Shareholding	0	1	0.2865	0.1669
Hong Kong/Macau/Taiwanese firms	0	1	0.4163	0.1998
Europe/US firms	0	1	0.0622	0.2416
Other FIE	0	1	0.2099	0.4074
Private	0	1	0.0779	0.2681
Electricity/Gas/Water	0	1	0.0121	0.1093
Real Estate	0	1	0.0721	0.2587
Transportation, Logistics, Post, Telecommunications	0	1	0.0577	0.2333
Education, Arts and Broadcasting	0	1	0.0058	0.0761
Banking	0	1	0.0358	0.1859
Scientific Research	0	1	0.0282	0.1656
Wholesale and Retail	0	1	0.1862	0.3894
Social Services	0	1	0.1088	0.3114
Construction	0	1	0.3983	0.1956
Number of Employees	10	8044	230.7919	394.4367

Table 6:

Ordered probit and Tobit regressions of employer social security payment behaviour on firm size, industry and ownership type

	Ordered Probit	**Tobit**
COEs	-0.057	5.708
	(0.086)	(21.126)
Shareholding	-0.466**	-88.356*
	(0.190)	(47.719)
Hong Kong/Macau/Taiwanese firms	-0.541***	-91.790**
	(0.154)	(40.918)
Europe/US firms	-0.305**	-57.365*
	(0.126)	(32.042)
Other FIE	-0.590***	-95.877***
	(0.086)	(21.421)
Private	-0.131	6.723
	(0.086)	(26.423)
Electricity/Gas/Water	-0.348	-111.978
	(0.276)	(75.774)
Real Estate	-0.316***	-68.275**
	(0.119)	(31.049)
Transportation, Logistics, Post, Telecommunications	-0.048	-21.359
	(0.120)	(31.514)
Education, Arts and Broadcasting	0.003	-11.124
	(0.377)	(89.989)
Banking	-0.275	-35.393
	(0.172)	(39.549)
Scientific Research	-0.168	-35.948
	(0.174)	(44.617)
Wholesale and Retail	-0.025	-12.180
	(0.081)	(19.985)
Social Services	-0.086	-0.963
	(0.099)	(23.760)
Construction	-0.288*	-106.239**
	(0.147)	(42.327)
Number of Employees	-0.0002**	-0.043*
	(0.000)	(0.023)
Constant		-167.061***
		(16.632)
τ_1	0.293***	
	(0.064)	
τ_2	0.482***	
	(0.065)	
μ		246.709***
		(7.904)

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. The reference categories for industry type and ownership respectively are manufacturing and SOEs.

Notes

[1] Information obtained from the BOLSS in Shanghai, November 2003.

[2] We use a Tobit model rather than ordinary least squares (OLS) because with OLS there would be a large number of "zeros", representing firms that pay the prescribed amount. Using OLS under these circumstances would result in biased coefficients. For a discussion of the Tobit model see any basic econometrics textbook, such as Gujarati (1995, pp. 570-575).

[3] 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.

[4] We have not altered the industry groupings in the data provided to us by the BOLSS, for example, by grouping some industries and not others. The break-up of industries in Table 2 reflects how the BOLSS classifies industries in Shanghai and is consistent with the official classification adopted by the State Statistical Bureau of China.

[5] In the multivariate regression results in Table 5, we omit two industry groups (geological exploring/ water management and agriculture). The statistical software used to estimate the models (STATA) gave an error message when we included these variables suggesting they were collinear. This reflects the fact that both only have a very small number of observations (less than 10) producing a high standard error.