

Labour Market Effects of Mandatory Social Insurance Policy: Some Evidence from Vietnam

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Vietnam is currently reforming its compulsory social insurance (SI) system. The most debatable change is an increase in mandatory SI contributions. This study uses panel data from Vietnam Enterprise Surveys to analyse how the rise in SI contribution rates from 2006 to 2013 has affected formal employment and wages. We find that, while the average wage per firm is negatively correlated to the ratio of total SI contribution to total wage fund, the average number of workers per firm is positively correlated to change in this ratio. A 1 percent increase in total SI contribution to total wage fund decreases by 0.16 percent the average wage per firm and increases by 0.039 percent the average number of workers per firm. A different impact is also found between firms according to industrial sector, ownership, firm size and employee gender: for a 1 percent rise in the SI contribution rate, the average wage per firm falls by 0.181 percent in the state-owned sector, 0.023 percent in domestic private and 0.098 percent in foreign-invested sectors. The impact on wages is higher in the shoe industry than in garments, textiles and other industries. By firm size, the largest effect is in microbusinesses, and the effect decreases as the scale of firm increases. The results indicate that the effects of an increase in the SI contribution rate on firms' average wage and formal employment do not much vary with the gender of employees.

8.1 Introduction

Along with remarkable economic achievements, the social security system in Vietnam has been significantly improved. The most important improvement in social protection concerns changes made to the social insurance (SI) scheme, which is designed on the principle of protecting workers against reduced income in the event of sickness, unemployment and retirement. In 1960, the North Vietnamese government issued a decree on the provision of social welfare services for all government officials and employees working in internal affairs, education, healthcare, the armed forces and state-owned enterprises (SOEs). This SI system provided coverage for only 600,000–700,000 of a total population of 17 million.

After reunification in 1975, SI was extended uniformly throughout the country. Social protection included long-term benefits (pension, early retirement and survivor support), which fell under the responsibility of the Ministry of Labour, Invalids and Social Affairs (MOLISA), and short-term benefits (sickness, maternity, work-related accidents and occupational diseases), which came under the management of the Vietnam General Confederation of Labour. The main funding was employer contributions and direct state budget support. During 1960–95, over 90 percent of total SI expenditure was covered by the state.

Chapter XII of the Labour Code, in force since 1 January 1995, deals specifically with social insurance. To guide implementation of the Labour Code, the government issued Decree No. 19/CP (dated 16 February 1995) on the establishment of the Vietnam Social Insurance (VSI) Office as a legal and independent accounting entity under the direct authority of the prime minister, but managed by MOLISA. The Office was mandated to help the prime minister with the implementation of SI and health insurance policies and SI fund management. Its sources of income were defined to include employer and employee contributions, state contributions and support, investment income and other financial assistance and support. SI benefits were indexed to the average monthly wage or salary and number of years of contributions. In the same year, the government promulgated Decree No. 12/CP (dated 26 January 1995) establishing the Charter of Civil Social Insurance, which specified benefits for injury or sickness, maternity, work-related accident and occupational diseases, pension and survivor allowance for civil recipients, and Decree No.45/CP (dated 16 July 1995), which regulated SI for the armed forces (the army and police). Both decrees specified that the SI fund be created by mandatory contributions from employers (15 percent of the total salary fund) and employees (5 percent of monthly salary). The SI fund is preserved and protected by the state. Since 2002, the health insurance

system, formerly under the management of the Ministry of Health, has been merged into VSI.

A further development occurred in 2007, when the first Social Insurance Law was put into effect with six mandatory components: sickness, maternity, work-related accidents and occupational diseases, unemployment insurance, retirement and survivor benefits. The law requires participation in SI schemes by employees from SOEs, non-SOEs with 10 or more employees, foreign direct investment (FDI) firms, foreign or international organisations, government administrative agencies, members of the ruling party's organisations and socio-political organisations. Following promulgation of the law, the scope and coverage of SI were remarkably extended. By April 2008, there were 8.2 million SI participants, accounting for nearly 18 percent of the total labour force. About 54 percent of workers in the state, foreign investment and private sectors registered to participate in the system.

To achieve the social targets set out in Socio-Economic Development Plan 2011–16, the government recently set a target of “approximately 50 percent of the total workforce participating in social insurance; 35 percent of the workforce participating in the unemployment insurance and over 80 percent of the population participating in health insurance by 2020”.¹ To that end, the amended Law on Social Insurance 2014 (Law No.58/2014/QH-13) extended the coverage of compulsory SI to include workers on short-term contracts (1 to 3 months), foreign workers permitted to work in Vietnam, and part-time government officials at commune, ward and township levels. The law also specifies several new groups of SI beneficiaries: cadets in police and military academies, students in national security colleges and salaried managers in collective cooperatives/businesses, whose social security was previously stipulated by other sector-specific regulations. New provisions on workers' rights have also been put forward, for instance, the provision that a male worker can have five days paid leave when his wife gives birth (seven days for deliveries requiring surgery). More importantly, changes to SI contribution rates were adopted (Table 8.1).

A new base for calculating SI contributions was introduced in 2016.² Previously the base included only the basic salary/wage specified in the employment contract. Effective since 1 January 2016, it now includes salary-related allowances such as attraction and regional allowances. Further, the law stipulated that the base would also include other payments such as children's education allowance and commission (KPMG 2016). At the same time, the

¹ Development Strategy for Social Insurance in Vietnam to year 2020 promulgated by Decision No.1215/QĐ-TTg, dated 23 July 2013.

² Decree No.115/2015/ND-CP and Circular 59/2015/TT-BLDTBXH.

regional minimum wage and basic salary were raised (Decree 122/2015/ND-CP). The regional minimum wage was increased by 12.4 percent on average, and the monthly base salary was increased from VND1.15 million to VND1.21 million, implying a remarkable increase in the salary base for social and health insurance contributions.

Table 8.1: Changes in contribution rates (percent), 2007–14

Year	Employer			Employee		
	Social Insurance	Health	Un-employment	Social Insurance	Health	Un-employment
From Jan 2007	15	2	-	5	1.0	-
From Jan 2009	15	2	1	5	1.0	1
From Jan 2010 to Dec 2011	16	3	1	6	1.5	1
From Jan 2012 to Dec 2013	17	3	1	7	1.5	1
From Jan 2014	18	3	1	8	1.5	1

Source: Authors' compilation from government documents

From the firm's perspective, social and health insurance contributions are essentially indirect labour costs. Thus, an increase in the contribution rate can result in a burden for firms. Firms may respond in various ways such as reducing wage levels, avoiding labour contracts or reducing employee numbers to minimise their production costs. If the burden of SI policy is sufficiently large for firms, the effectiveness of social protection can hardly be expected. These reasons give rise to our attempt to analyse the compulsory SI scheme and its impacts on enterprises.

The main objectives of this study are to (1) examine changes in the compulsory SI contribution scheme and its implementation, and (2) analyse the impact of compulsory SI contributions on labour demand and wages.

8.2 Review of theoretical and conceptual frameworks

8.2.1 Possible responses of firms and labour to increase in social insurance contributions

With no compulsory SI contributions and perfectly competitive markets for production factors, the firm will choose a level of employment level that equalises the wage rate and the marginal product of labour to maximise profits. This wage will correspond to the market equilibrium level. Under the compulsory SI scheme, the firm bears the cost of SI – the non-wage

labour cost. Under the pay-as-you-go system, the SI contribution is equal to a fixed proportion of the wage, which is essentially a firm-borne labour tax. Compulsory SI may then induce different responses from both the firm (demand side) and the labourers (supply side).

8.2.1.1 Possible responses of firms

The firm usually seeks to minimise the cost of compulsory SI and maintain profits. To do this, the firm may:

1. Directly reduce SI costs by employing fewer workers and/or reducing the wage by a fraction of or the whole contribution amount. If the firm is able to shift the cost entirely to labour, compulsory SI will have virtually no effect on labour demand. However, shrinking the payroll by the total SI contribution is often hard to achieve, particularly if workers are entitled to a legal minimum wage and/or if the workforce is highly skilled. Similarly, if the firm creates the majority of employment for a geographical region and it is hard for workers to move to other regions, compulsory SI contributions will have no negative impact on labour demand. In this case, the firm may recruit workers of a certain skill level who are willing to work for a lower wage than they otherwise would have. As long as SI contributions are less than or equal to that wage saving, compulsory SI will have no effect on the number of workers recruited.
2. Indirectly reduce SI costs. This usually happens over a longer period of time, and may take place simultaneously with direct reduction of SI costs. In the long term, the firm may increase labour productivity by:
 - Investing in new technology, increasing machinery efficiency and capacity if there is spare capacity.
 - Using more capital (or other inputs) and less labour and becoming more capital-intensive. The magnitude of such substitution effect, however, depends on the prices of the factors of production. In fact, a rise in the price of one factor of production usually leads to increases in the prices of other inputs.

These alternatives require access to additional capital. If the firm substitutes capital for labour, then it is possible that labour demand will fall. Under such circumstances, the demand for labour with no or low skills will go down dramatically. The firm may also:

- Reduce other costs, such as administration and management, by reorganising its production and business and using fewer managers to offset SI costs. In this case, a fall in labour demand may be avoided.

- Borrow to make SI contributions, a more passive approach than other solutions. In the worst case, the firm may violate labour regulations and declare fewer workers under SI to avoid this cost.

All of the above responses are possible, but the firm is more likely to pass the costs to labour partially or completely by reducing either the wage or employment. That is, there is a negative relationship between labour demand and the SI contribution rate. This relationship has been suggested in numerous studies from around the world.

8.2.1.2 Possible responses of labourers

Workers may respond differently to compulsory SI contributions. The type and magnitude of the response depend on how much workers value SI. If the perceived benefits are less than the contribution, or if current consumption is sufficiently preferred, workers may choose to leave for other firms not under compulsory SI. In this case, the relationship between contributions to and benefits from SI is considered non-existent. As a result, labour supply in the formal sector will decrease. Conversely, if workers value SI benefits sufficiently highly, they are willing to make contributions and even to accept lower wages. In this case, a perfect relationship is evident between contributing to and receiving benefits from SI, and compulsory SI has no negative effect on labour supply in the formal sector. Indeed, the formal sector may even attract more labour from the informal sector. The magnitude of the response depends on workers' valuation of SI benefits and/or the possibility of finding a job or earning an income and personal situation.

This study considers only how firms respond to compulsory SI. As SI is essentially an indirect labour cost, we first consider the likelihood of the firm directly reducing these costs – an approach commonly adopted by other studies. That tendency may lead to a reduction in employment and/or a decline in the average wage.

8.2.2 Theoretical relationship between SI contributions, wages and firms' labour demand

A number of studies have explored the relationships between SI contributions, firms' demand for labour, and wages (Gruber 1994, 1997; Marrufo 2001; A. Kugler and M. Kugler 2003). Empirical evidence on the impact of changes in SI contributions for different countries is mixed. Some studies suggest that contributions do have an impact on wages, but the effect on employment is unclear (Gruber and Krueger 1991; Gruber 1994, 1997). Other studies indicate

that in many developing countries, the relationship between contributions and labour demand is not significant (IMF 2014; Rutkowski 2007).

A classic study that remains relevant is the paper by A. Kugler and M. Kugler (2003). Based on a simple analytical framework, the authors constructed a quantitative model to assess the effect of increases in payroll taxes (paid by firms) on firms' labour demand and wages in Colombia. The authors pointed to a formal wage fall of between 1.4 percent and 2.3 percent and a lowered formal employment rate of between 4 percent and 5 percent as result of a 10 percent rise in payroll taxes. The authors assumed that the firm uses labour as the only input, with the production function exhibiting diminishing marginal returns to labour. The firm is assumed to operate in a perfectly competitive market (i.e. prices of outputs and production factors are given). In addition to the monthly wage, denoted by ω , the firm also has to make SI contributions at fraction t_s of the monthly wage, as stipulated by law. t_s is calculated by dividing the SI contribution amount by the wage – the base for SI contributions. The cost per worker, denoted by W , is equal to the sum of the two above-mentioned costs: $W = \omega + \omega t_s = \omega (1 + t_s)$. The problem for the representative firm³ is to choose an employment level to maximise its profits. Under certain assumptions, the authors construct the supply and demand functions for labour. In a perfectly competitive market, the supplied and demanded quantities will be equal at the equilibrium wage. From that approach, A. Kugler and M. Kugler (2003) show that, in theory, the negative relationships between (1) the ratio of SI contributions to wages and (2) the SI contribution rate and employment can be represented by the following equations:

$$\frac{d \ln \omega}{d t_s} = -\frac{\eta^s + (1 + t_s)}{\eta^s + 1} < 0 \quad (1)$$

$$\frac{d \ln L}{d t_s} = \left[\frac{d \ln \omega}{d t_s} (1 + t_s) + 1 \right] \left(\frac{\omega}{L} \right) < 0 \quad (2)$$

In the above equations, η^s is the elasticity of labour supply and L denotes labour demand. However, increasing the contribution rate may leave labour demand unaffected if workers highly value the benefits of SI or if labour supply is perfectly inelastic. In both cases, workers make SI contributions only because of their high valuation of SI benefits. Under such circumstances, the firm may shift the whole SI cost to labour by reducing the wage and keeping the workforce size unchanged.

Nevertheless, reducing the wage is difficult, particularly in countries with a legally stipulated minimum wage, which may limit the magnitude of wage

³ There are a large number of firms in the economy. However, for simplicity, these firms are assumed to be homogeneous, to facilitate the use of a single firm as representative.

reduction. Hence, in the presence of minimum wage regulations, SI may reduce labour demand, and workers with no or low skills will be the most disadvantaged.

8.2.3 Quantifying the impact of SI contributions on wages and employment

Descriptive analyses were undertaken of the impact of SI contributions on employment and wage levels. Quantitative analyses were conducted using econometric models. Based on the theoretical grounds presented earlier, two specific models on the impact of SI contributions on employment and wages in Vietnam can be expressed as follows:

$$\log(\omega_{ijt}) = \beta_1 + \beta_2 t_{ijt}^s + C_{ijt} + u_{ijt} \quad (3)$$

$$\log(E_{ijt}) = \gamma_1 + \gamma_2 t_{ijt}^s + d_{ijt} + e_{ijt} \quad (4)$$

where ω_{ijt} denotes the average wage of the i^{th} firm in the j^{th} industry, measured by $\omega_{ijt} = W_{ijt}/E_{ijt}$, where W is total wage fund⁴ and E is year-end total labour of the firm. t_{ijt}^s is the ratio of total SI contributions by the i^{th} firm in the j^{th} industry at time t (C_{ijt}) to the total wage fund (W_{ijt}), or $t_{ijt}^s = C_{ijt}/W_{ijt}$. And d_{ijt} are fixed effects and u_{ijt} and e_{ijt} are idiosyncratic disturbances.

These two fundamental models are structured based on A. Kugler and M. Kugler (2003) and include single independent equations and fixed effects. The independent variable, which is the ratio of total SI contribution to total wage fund, helps to gauge the impact of SI on employment as labour demand (equation 4) and wages as the price of labour (equation 3). These are certainly the two important factors in the labour market.

To consider the effects of other factors (possible independent variables) on wage and employment levels, models (1) and (2) are modified to include two more variables – $dnnn_{ijt}$ and Fem_{ijt} . $dnnn$ is a dummy variable representing whether the firm is an SOE, while $dndm$ is the variable representing whether the firm is in garments and textiles. $DNSN$ is another dummy variable representing whether the enterprise has a labour force smaller than 10 workers. Fem_{ijt} is the share of female workers in total number of workers of the i^{th} firm in the j^{th} industry at time t , which captures the effect of the share of female workers on average wage of the firm. This variable, however, is included only in equation (1), being excluded from equation (2) to avoid multi-collinearity. The expanded models are as follows:

⁴ In the model of A. Kugler and M. Kugler (2003), W is the total wage fund – the base to calculate SI contributions. In fact, the firms in these countries comply relatively strictly with regulations on labour contracts and negotiated wages. Hence, the total wage of workers paying SI contributions is almost equal to the actual wage fund of the firm. In Vietnam, there is a gap between these two amounts.

$$\log(\omega_{ijt}) = \beta_1 + \beta_2 t_{nijt}^s + \beta_3 dndm_{nijt} + \beta_4 Fem_{nijt} + \alpha_{ijt} + \varepsilon_{ijt} \quad (5)$$

$$\log(\omega_{ijt}) = \beta_1 + \beta_2 t_{nijt}^s + \beta_3 dnnn_{nijt} + \beta_4 Fem_{nijt} + \alpha_{ijt} + \varepsilon_{ijt} \quad (6)$$

$$\log(\omega_{ijt}) = \beta_1 + \beta_2 t_{nijt}^s + \beta_3 DNSN_{nijt} + \beta_4 Fem_{nijt} + \alpha_{ijt} + \varepsilon_{ijt} \quad (7)$$

$$\log(E_{ijt}) = \gamma_1 + \gamma_2 t_{ijt}^s + \gamma_3 dnnn_{nijt} + \lambda_{ijt} + v_{ijt} \quad (8)$$

$$\log(E_{ijt}) = \gamma_1 + \gamma_2 t_{ijt}^s + \gamma_3 dndm_{nijt} + \lambda_{ijt} + v_{ijt} \quad (9)$$

$$\log(E_{ijt}) = \gamma_1 + \gamma_2 t_{ijt}^s + \gamma_3 DNSM_{nijt} + \lambda_{ijt} + v_{ijt} \quad (10)$$

All the above equations are now multi-variable models that can capture multi-dimensional effects of factors affecting employment and wages in Vietnam. Equations (5), (6), (7) and (8) are modified from equation (1), and all include three independent variables estimating the impact on wages. Equations (8), (9) and (10) are developed to gauge the impact of various factors on employment levels. In the latter equations, two explanatory variables are included. The number of estimation models/equations is larger, corresponding to the larger number of dummy variables representing not only SOEs but also FDI and private sector firms for the case of ownership variables. It is similar for variable *DNSN*, with different dummies for different scales of enterprises.

8.3 Data

Data in this research comes from Enterprise Surveys conducted by Vietnam's General Statistics Office (GSO) between 2006 and 2013. These surveys cover the formal sector only. The Law on Social Insurance stipulates that all enterprises must contribute to social and health insurance and union fees every month. Table 8.2 shows the stipulated contribution rates.

Table 8.2: Social protection contribution rates of enterprises (percent), 2006–13

Year	Social insurance	Health insurance	Union fees
2006	15	2	2
2007	15	2	2
2008	15	2	2
2009	15	2	2
2010	16	3	2
2011	16	3	2
2012	17	3	2
2013	17	3	2

Source: Law on Social Insurance and related regulations

The surveys include information on firm characteristics, number of workers, type of firm, scale of labour from the beginning to the end of the year, total wage fund, total SI contributions and union fees. Thus, the surveys provide sufficient data for the purposes of this research. After data cleaning and checking the consistency of time-invariant variables between surveys, we achieved a strong balanced panel of 2,838,664 observations for eight years. The surveys also provide information on firms' total wage funds, which are likely to be larger than the total wage funds under SI. Thus, the actual SI payment rate of enterprises was lower than the legally stipulated rate, and varied over years.

From 2006 to 2009, enterprises were responsible for a compulsory direct premium of 19 percent of the monthly wage fund (15 percent for SI, 2 percent for health insurance and 2 percent for union fees) for its workers. The formula is as follows:

$$\text{Contribution}_{\text{rate}} (19) = \frac{\text{social}_{\text{insurance}} + \text{health}_{\text{insurance}} + \text{union}_{\text{fee}}}{\text{Total}_{\text{wage fund}}} * 100$$

The contribution rate changed slightly from 2010 to 2013, amounting to 22 percent, of which SI contributions accounted for 17 percent and health insurance and union fees 5 percent. All enterprises pay the same contribution rate; differences come from the total wage funds of firms. The wage fund currently differs between SOEs, domestic private and foreign-invested enterprises (FIEs). In the SOE sector, social and health insurance premiums are based on wages, which depend on the minimum wage and wage scale. In domestic private enterprises and FIEs, contributions are calculated based solely on the contractual wage level.

In this study we construct several variables for exploring the effect of contribution rates on employment and wages (Annex Table A1). Annex Table A2 shows trends in SI contribution rates over the sample period. Rates fluctuated, with the highest average SI contributions in 2011 and 2012 and a drop in 2013. The average wage also increased over time, while employment dropped from 2009 to 2013. The average SI contribution rate is shown by ownership type, number of workers and industrial sector. SOEs have the highest SI contribution rate, followed by FDI and private domestic firms. Firms with more than 100 workers have the highest proportion of workers making SI contributions as well as the highest total SI contribution. The shoes and garment sectors dominated labour SI contributions as well as total SI contributions (Annex Table A3).

8.4 Results and discussions

8.4.1 Social insurance contribution and changes in employment

In Vietnam, firms can recruit workers under three types of work contracts: (1) short term (normally under three months), (2) seasonal⁵ and (3) long term (full-time employment equivalent).⁶ Before 2014, the compulsory SI scheme covered Vietnamese workers with employment contracts of three months or longer and applied only to companies with 10 or more employees. Employees working under a contract of less than three months had the SI contribution included in their salary and were responsible for paying their own SI contributions or joining the voluntary SI scheme.

Table 8.3: Full-time workers and contributions to social and health insurance and union fees per firm

Year	2006	2007	2008	2009	2010	2011	2012	2013
Total workers (0,000)	6,560.4	6,955.6	7,967.4	8,758.1	9,643.3	11,070.2	11,313.4	11,462.9
Workers per firm (persons)	50.02	44.70	38.77	35.14	33.06	32.63	31.44	30.04
Workers contributing SI (0,000)	3,712.3	4,012.1	4,624.3	4,773.4	5,469.9	6,369.7	6,670.5	6,912.8
Workers with SI per firm (persons)	28.30	25.78	22.50	19.15	18.75	18.78	18.54	18.12
Annual contribution/ firm (VND million)	72.89	80.05	89.77	129.71	136.63	194.13	199.51	176.96

Source: Authors' calculations using data from GSO surveys 2006–13

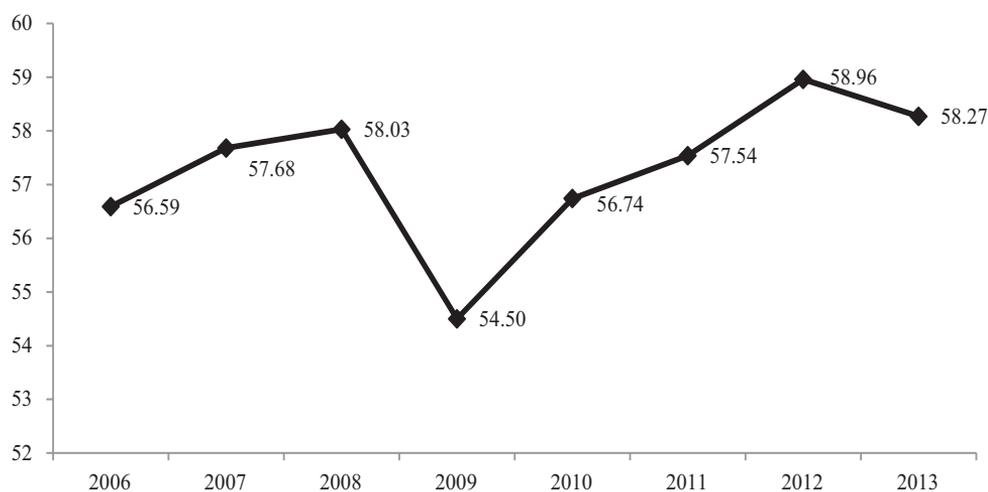
Table 8.3 presents the total number of workers and workers covered and contributions to social and health insurance and union fees per firm. Both the total number of workers and the number of workers paying SI went up over the years, while the average number of workers per firm fell. Firms tended to recruit more seasonal workers instead of permanent workers or those on long-term contracts in order to reduce labour costs. However, annual contributions to social and health insurance and union fees per firm went up in 2006–13 because the contribution rate and minimum wage increased.

⁵ Seasonal workers are paid on an hourly, piece-work or seasonal basis.

⁶ Full-time employment equivalent is calculated based on 26 working days per month. The full-time employment equivalent is used to calculate the average wage.

The average SI participation rate for registered firms increased from 56.59 percent in 2006 to 58.27 percent in 2013 (Figure 8.1), a mere 1.68 percentage points over eight years. In 2009, the figure dropped due to the global financial crisis, which affected Vietnam's economy. A number of firms went bankrupt and closed. The shortfall in employee coverage from firms' participation in the SI program can be explained by the presence of more temporary workers and/or workers without employment contracts in almost all firms, as the Social Insurance Law at that time covered only workers with contracts of at least three months. Firms also tended to recruit workers on short-term contracts in order to cut costs.

Figure 8.1: SI coverage rate at firm level (percent)



Source: Authors' calculations using data from GSO surveys 2006–13

The low SI coverage in the surveyed sectors also reflects the current issues of the whole country. Compulsory SI has so far been extended to just 15 million people, or 20 percent of the total employed. Compared with OECD, East Asian and Southeast Asian countries, where the coverage rate of SI schemes is 84.3 percent, 42.6 percent and 38.8 percent, respectively, Vietnam's rate seems very modest. Since the main objective of the SI program is to protect the working population, the low coverage rate may threaten its viability.

Employees of SOEs and FIEs overwhelmingly dominate SI coverage, resulting in disproportionately unequal treatment. Participation in voluntary SI is modest, approximately 150,000 people (MOLISA 2013) as shown in Annex Table 4. Participation in the SI program varies across types of employment. Coverage is almost non-existent for agricultural and informal

sector employees. By contrast, in the formal sector, coverage is almost universal for SOE employees, very high for FIE employees, but low for workers in domestic private firms, most of which are small and medium enterprises (SMEs).

As the Social Insurance Law applies only to companies of 10 or more employees, SMEs have an incentive not to increase the number of employees as they would then have to pay social security contributions. This rigid or unprogressive system provides a specific disincentive for the formalisation of SMEs, which can be clearly seen in Annex Table A5. The firm participation rate in the SOE sector is extremely high, close to 90 percent in 2013. Almost all SOEs, whether of central or local level, participate in the SI program. The FIE sector, which includes all foreign investment firms, joint ventures with state capital and joint ventures with other types of ownership, also has a high rate of participation, though it decreased slightly from 2006 to 2013. The private sector has the lowest participation rate.

Firms with higher percentages (more than 50 percent) of females in their workforce have a higher SI contribution rate than those with smaller proportions of females in their workforce. This implies that enterprises employing more female workers are more SI policy compliant. However, female employees work mainly in the leather and shoe, textile and garment sectors. These sectors have higher SI rates than other sectors (discussed later).

As shown, the average number of workers per firm participating in SI is highest for SOEs. In general, the average number of workers per firm of all sectors decreased in 2006–2013 although firms' SI contributions continued to increase. The reason for the decrease in the amount of formal employment was the hiring of temporary workers to avoid paying compulsory SI.

8.4.2 Social insurance contributions and changes in wages

Using GSO survey data, the average annual income per worker is calculated for the four firm ownership types. The average annual wage is calculated based on the wage-similar income, as defined in GSO survey questionnaires. This average wage is paid by the firm to each full-time employee equivalent. As seen in Table 8.4, the total average wage increased steadily year by year, except for 2011 due to the financial crisis. This reflects the minimum wage policy.

Workers from FIEs received the highest nominal wages among sectors. Their average wage gradually rose from VND42.5 million per year in 2006 to nearly VND130 million in 2013, whereas the sector's SI participation rate decreased (Annex Table 5). Although the wage rate in the SOE sector was lower than in the FIE sector, the SI participation rate was higher. This may

be because the SOE sector complies better with regulations. Wages in the private sector were the lowest, as were SI participation rates. Some poor practices have been blamed for this result. For instance, a study conducted by the Vietnam Academy of Social Sciences showed that fewer than 10 percent of firms paid SI contributions on employees' wages (VASS 2011). Fraudulent practice is reportedly prevalent among SMEs, with employers paying higher wages than those specified in the labour contract but paying SI contributions on the wage base, which on average represented 42.7 percent of actual wages. Other earnings manipulations often used by firms include lowering per-hour wages while raising overtime payments, or converting part of the wage into a bonus to lower SI contributions.

Table 8.4: Average annual nominal wage, by firm ownership type (VND million)

	2006	2007	2008	2009	2010	2011	2012	2013
Total	19.10	23.64	31.52	40.58	45.16	43.54	52.70	53.80
SOEs	27.95	34.25	42.32	52.00	84.03	74.38	79.66	86.70
Private enterprises	18.25	22.84	30.37	33.69	43.65	38.16	50.76	51.44
FIE	42.50	46.14	62.76	70.21	89.56	110.36	114.93	129.97

Source: Authors' calculations using data from GSO surveys 2006–13

Among the studied firms, those with fewer than 10 employees have the lowest SI participation rates and average wages (Annex Table A7). Clearly, bigger firms are more SI policy compliant than smaller firms. Apart from popular anecdotal evidence on firms' evasion of SI contributions, a report by the VSI Office (2014) states that firms' SI contributions remain low often due to under-reporting of wages. In order to minimise SI contributions, some private sector firms collude with their employees to understate wages in the labour contract or keep the reported wage unchanged over time despite an increase in actual wages paid.

On the other hand, the shortfall in SI contributions by small private firms can be explained by the fact that the average worker values additional current earnings considerably more than future social security benefits. A study by Castel and Thanh (2009) finds some evidence from the data collected by Enterprise Census 2007, that the highest wage earners are most likely to be found in firms that do not pay social security contributions on current wages, while the lowest net wage earners are most likely to be found in firms that do pay contributions on current wages. This means that the shortfall in

social security payments from current wage-based contributions is captured by employees in the form of increased net wages. Again, this is roughly in line with the results of the recent VASS survey to monitor the impacts of the global economic crisis on Vietnamese firms and workers (VASS 2011). The interviews revealed that workers may quickly move across firms because of wage differentials of as low as VND100,000 per month, even at the expense of losing their health insurance and other social security benefits. This unfortunate preference could come from workers' severe cash constraints, but could also reflect the lack of public appreciation or awareness of the important role of social security benefits in reducing the risks associated with old age or unforeseen circumstances.

Firm and employee participation in compulsory SI also vary across different industries. The textile and garment, shoe and leather industries are the major export sectors and are also labour extensive. In 2013, according to GSO data, Vietnam's apparel products were exported to more than 180 countries and territories, with a turnover of USD17.9 billion accounting for 13.6 percent of total exports and 10.5 percent of GDP. Currently there are about 6,000 textile and apparel enterprises in the country, employing more than 2.5 million workers or about 25 percent of labour in the industry sector. There are almost 800 shoe and leather firms, employing nearly 1 million workers (about 10 percent of total industrial labour). Women make up about 80 percent of the total shoe and leather workforce. Therefore, these sectors play an important role in the economy as well as social security.

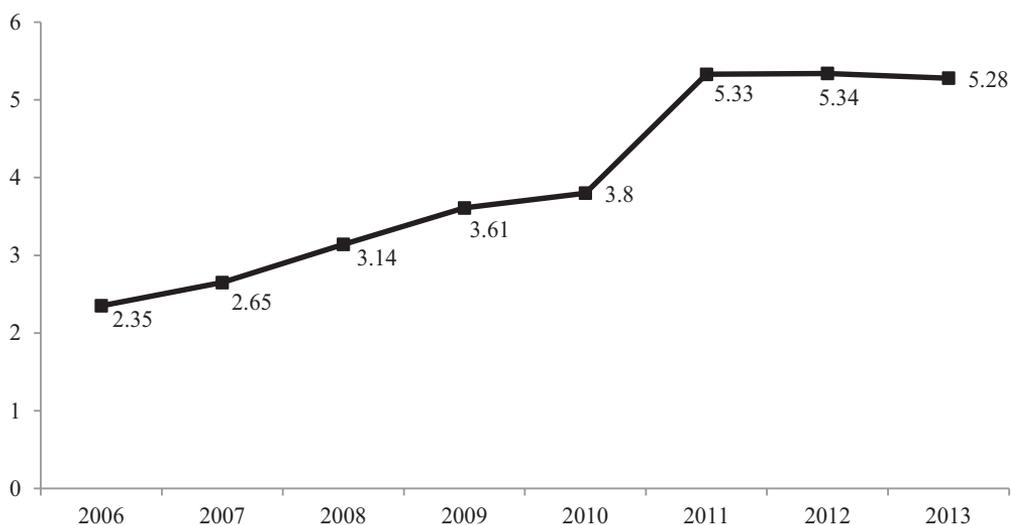
As seen in Annex Table A8, the SI contribution rates in the textile and garment, shoe and leather industries are higher than in the country overall. This can be explained by the fact that most firms in these sectors are medium or big, which often achieve greater levels of regulatory compliance. The contribution rate of other industries is low compared with the country total. This is because most firms in these industries are small, and the proportion of temporary/short-term contract workers is larger. Another explanation is that most firms in these sectors are quite new (under 10 years old). Very often, newly established firms need some time to comply with various government regulations, or they deliberately delay compliance for as long as possible in order to cut costs during their start-up.

Generally, the SI coverage rate is low in business. This situation will negatively affect the social security system in the long term, especially when the majority of textile, garment and shoe workers are women, who often retire early (under 40 years old) because these sectors usually demand younger workers. Therefore, workers retiring from these sectors do not receive pensions and face challenges in securing their livelihoods. Moreover, as the average

wages in these sectors are also lower than the average for the whole country, the workers cannot save money for retirement.

Figure 8.2 shows that in 2013 firms made SI contributions equal to 5.28 percent of wages, a slight decrease compared to 2011 and 2012. This result is consistent with the findings of VASS (2011), that more than 34 percent of workers were in firms that make social security contributions of between 1 and 5 percent of wages, and 33 percent in firms that contribute between 5 and 10 percent.

Figure 8.2: Ratio of firms' SI contributions to wages (percent)



Source: Authors' calculations using data from GSO surveys 2006–13

In short, for the overwhelming majority of participating employees, SI coverage is only partial, falling noticeably short of the statutory contribution rate because firms either do not register all their employees or do not report all the wages they actually pay.

8.4.3 Regression results

The data used for regression analyses are panel data from Vietnam Enterprise Surveys 2006–13. This official database is the most important source for all estimations on business. This is also one of the best databases for assessing the efficiency of SI policy due to its rich information on enterprises, including SI contributions. Based on the database, the relationship between SI contributions and other enterprise performance indicators is estimated.

8.4.3.1 All enterprises and by firm ownership

Estimations for models (1) and (2) were performed using Stata software with corresponding regression models. The sample comprises all registered enterprises, giving a huge sample size of 197,599⁷ enterprises (the largest sample). The results are presented in Table 8.5.

Table 8.5: Impact of SI contributions on average wage and workers per firm

	Average wage per firm	average workers per firm
All firms	-0.00075*** (0.00010)	0.00131*** (0.00018)
SOEs	-0.00018*** (0.00025)	-0.00027* (0.00052)
Private enterprises	-0.00023 *** (0.00024)	0.00019*** (0.00050)
FDI firms	-0.00098* (0.00004)	0.00008 (0.00091)

Notes: * 10%, ** 5%, *** 1% statistical significance level. Standard errors are in brackets.

Source: Authors' calculations using data from GSO surveys 2006–13

The estimation results for equation (1) show that the average wage per firm (ω) is negatively correlated to the ratio of total SI contribution to total wage fund (variable t). The estimation results for equation (2) reveal that the average number of workers per firm is positively correlated to the ratio of total SI contribution to total wage fund. These two variables are statistically significant at the 1 percent level. The magnitudes of coefficients show the degree of the impact of independent variable (t) and the corresponding dependent variables (ω and E). Accordingly, a 1 percent increase in the ratio of total SI contribution to total wage fund would result in a 0.0751 percent reduction in the average wage per firm.

This result implies that an SI contribution increase would induce firms to reduce the average wage. Although the magnitude of this impact is not very high, it suggests that the SI contribution rate should not be raised too much because firms could react negatively to SI rules by using lower quality labour, thus lowering social productivity. Experience from OECD countries shows that fiscal cost “can also be reduced by targeting social security contributions relief to specific groups, such as low-skilled or youth,

⁷ The sample size here is 197,599, which is much smaller than the observations of the panel dataset because of some missing values; besides, when running the fixed-effects regression, invariant-time variables such as gender were excluded.

where the unemployment problem is generally more severe” (IMF 2014, 35). Firms would therefore be induced to have more concerns for short-term rather than long-term efficiency.

In contrast, a 1 percent increase in the ratio of total SI contribution to total wage fund would result in a 0.131 percent increase in the average number of workers per firm. In terms of absolute impact, this impact is minor. However, the change is in the same direction as SI contributions. Although the impact of the main independent variable is also significant in this case, it suggests the possible behaviour of firms – that an SI contribution increase would induce them to increase their workforce.

We also estimate the impact of SI contributions on employment and average wages for SOEs, FDI and domestic private firms. The calculation uses regression equations (4) and (7), estimated using an ownership dummy variable for each ownership sector. The objective of these estimations is to compare the extent of impact of SI contributions on labour demand and wages in different ownership types.

The results in Table 8.5 show that the average wage per firm is negatively affected by SI contributions in all ownership sectors. However, the relationship in SOE and domestic private sectors has higher statistical significance than in the FDI sector (1 percent compared to 10 percent). However, the absolute value of corresponding coefficients of variable t for SOE and FDI sectors is greater than that of the domestic private sector, showing greater impact on average wage per firm in these two sectors. In the SOE sector, a 1 percent increase in the ratio of total SI contribution to total wage fund seems to decrease the average wage per firm by 0.181 percent. The corresponding figures for private and FDI sectors are 0.0225 percent and 0.0984 percent, respectively, which are much smaller. In other words, the impact of an SI contribution increase on average wage per firm is stronger in the SOE sector.

The impact of SI contributions on labour demand is also different among ownership sectors. While the increased share of SI contributions in total wage fund negatively affects labour demand in SOE and FDI sectors, it positively affects employment in the private sector. This fact may indicate the situation in which private businesses are more concerned about their profitability than an increase in SI contributions. As long as its impact on total production costs is small, private firms would still want to employ more workers to drive profitability. That is, a 1 percent increase in the share of SI contributions in the total wage fund would result in a mere 0.011 percent increase in labour demand in private sector firms. In contrast, a 1 percent increase in this variable would cause a 0.027 percent decrease in employment in the SOE sector. Again, these facts show that the magnitudes of these impacts in all three sectors are

minimal, meaning that SI contribution is not a major factor affecting firms' labour demand in Vietnam.

8.4.3.2 By industries

Different industries have different labour structures; thus, the impact of SI contributions on firms' labour demand and average wages within these industries has specific features. In this study, the impact is estimated in three industry groups: textile and garments, shoes and others. The first two industries are very labour intensive and play an important role in employment creation. SI contributions and pensions are of great concern to workers as well as employers in these industries.

For econometric estimations, equations (7) and (9) were estimated with a dummy variable representing whether the firm belongs to a specific industry. The objective of these estimations is to compare the level of impact of SI contributions on labour demand and average wages in these three industries.

Table 8.6: Impact of SI contributions by industry

	Textile and garments		Shoes		Other	
	Average wage per firm	Average workers per firm	Average wage per firm	Average workers per firm	Average wage per firm	Average workers per firm
Coefficient	-0.00016**	0.00038	-0.00016***	0.00390***	-0.00155***	0.00041**
Level of sig.	(0.00025)	(0.00054)	(0.00025)	(0.00054)	(0.00026)	(0.00006)
Observations	2,367	2,367	1,922	1,922	124,293	124,293

Notes: * 10%, ** 5%, *** 1% statistical significance level. Standard errors are in brackets.

Source: Authors' calculations using GSO survey data (2006–13)

The results in Table 8.6 show that the average wage per firm is negatively affected by SI contributions in all three industries. The levels of significance in all three groups are relatively high at 5 percent and 1 percent. As we consider the effects in specific industries, the number of firms in the sample drops to 2,367 in garments and textiles and 1,922 in shoes. The absolute values of corresponding coefficients of variable t for shoes are significantly higher than those for textile and garments, as well as other industries, showing a much greater impact of SI contribution on average wage per firm in this sector. In the shoe industry, a 1 percent increase in the ratio of total SI contribution to total wage fund would cause a 0.016 percent decrease in the average wage per firm. This industry is therefore very sensitive to the SI contribution rate. Shoe enterprises seem to adjust much more than their counterparts in textile and garments and other industries.

The impact of SI contributions on labour demand has a similar pattern in the shoe industry, with a significantly higher coefficient of variable t . While an increase in the ratio of total SI contribution to total wage fund positively affects firms' labour demand in the other two groups at very modest levels, it positively affects employment in the shoe industry much more. In all industries, in the event of an SI contribution increase, firms want to employ more workers. This means that this factor does not harm their production very much. Numerically, a 1 percent increase in the ratio of total SI contribution to total wage fund would result in a 0.390 percent increase in labour demand in the shoe industry. In contrast, a 1 percent increase of this variable would cause a mere 0.038 percent increase in employment in textiles and garments. Firms in the surveyed industries react differently even though all are labour intensive.

In general, an increase in SI contribution does not have a negative impact on labour demand; even a slight increase in demand is observed. This may be because the investigated industries are all labour intensive. Firms in labour-intensive sectors often find it easier to switch from higher skilled to lower skilled labour or from long-term to short-term contract labour. Schmillen and Packard (2016) point out that, although lower skilled labour implies higher training costs for businesses, the lower total payment is attractive enough for employers to replace higher skilled labour with lower skilled. In contrast, the highest skilled employees are an exception: firms always try to retain them with higher pay. However, the number of very highly skilled workers is often not very big. Therefore, keeping high pay for this category of labour does not cause significantly higher costs for businesses. Shorter contracts would help firms achieve more flexibility in their employment strategies.

8.4.3.3 *By firm size*

The impact of SI contributions on labour demand and average wage per firm can also be seen from another important angle: firm size. The behaviour of larger firms is expected to be different from that of smaller ones.

The results were obtained by estimating equations (6) and (8) in which the firm size variable is included to measure the impact of SI contributions on average wage and labour demand. Again, firms are grouped into four distinct sizes by number of workers.

The estimation results in Table 8.7 show that the ratio of SI contribution to total wage fund negatively affects average wage per firm for all firm sizes. All the estimated coefficients are significant at the 1 percent level (5 percent for firms with more than 100 workers). However, the impact on smaller firms is larger, with the largest impact on micro-enterprises. For the 15,458 micro-

enterprises in the Enterprise Surveys, a 1 percent increase in the ratio of SI contribution to total wage fund would result in a 0.0178 percent reduction in the average wage per firm. Clearly, micro-enterprises react more strongly to an increase in SI contributions. This could be because they are more vulnerable to increased non-wage labour costs induced by the SI contribution. This impact declines as the size of enterprises increases. For enterprises with more than 100 workers, the impact is minimal (only 0.01 percent).

Table 8.7: Impact of SI contributions by firm size

	average wage per firm			
	< 10 workers	10 to 50	51 to 100	>100 workers
Coefficient	-0.000178*** (0.000245)	-0.000171*** (0.0000246)	-0.0001631*** (0.0047607)	-0.0001051** (0.0000325)
Observations	15,458	46,733	21,756	44,635
	average workers per firm			
	Fewer than 10	10 to 50	51 to 100	More than 100
Coefficient	0.00517*** (0.0005062)	0.0003327*** (0.0000589)	-0.0000199* (0.000012)	-0.0000232 (0.0000437)
Observations	15,458	46,733	21,756	44,635

Notes: * 10%, ** 5%, *** 1% statistical significance level. Standard errors are in brackets.

Source: Authors' calculations using data from GSO surveys 2006–13

At the same time, an increase in the ratio of SI contribution to total wage fund positively affects labour demand in all firm sizes. However, for micro-enterprises and those with 10–50 workers, the impact is greater. For micro-enterprises, a 1 percent increase in the ratio of SI contribution to total wage fund causes a 0.517 percent increase in labour demand. The corresponding figure for enterprises with 10–50 workers falls to only 0.033 percent. The coefficient for enterprises with 51–100 workers is very minor, and for firms with more than 100 workers, the coefficient of variable t is even insignificant.

8.4.3.4 By gender

To capture the effects of SI contributions on the share of female workers in firms' total workforce, the regression models were modified. This variable is added to the estimation model along with firm ownership, workforce size and sector. The estimation results are presented in Table 8.8.

The coefficients of the ratio of SI contribution to total wage fund are statistically significant at the 1 percent level. However, their magnitudes are very small, showing minor impact. All other independent variables are also statistically significant. However, the corresponding coefficient for the share of female workers in total labour is minimal: -0.0010348 for equation (1), -0.000785 for equation (2) and -0.000747 for equation (3). This suggests that, in the event of an SI contribution increase, this factor will barely affect the average wage per firm. This clearly implies that firms with different shares of female workers do not exhibit considerably different behaviours in setting wages or recruitment policies.

Table 8.8: Impact of SI contributions on the average wage (whole sample)

	average wage		
Coefficient	-0.00075*** (0.00002)	-0.00075*** (0.00010)	-0.00074*** (0.00010)
dnnn	0.22943*** (0.00076)		
dndm			0.04608*** (0.00903)
DNSN		0.012771*** (0.0032696)	
Fem	-0.00103**** (0.00000083)	-0.0007851 (0.0000826)	-0.00075*** (0.00008)
Observations	197,441	197,441	197,441

Notes: The sample size here is smaller than the number of observations of panel dataset because of some missing value. * 10%, ** 5%, *** 1% statistical significance level. Standard errors are in brackets.

Source: Authors' calculations using data from GSO surveys 2006–13

When we control for fixed effects of ownership type, sector and firm size, the results appear to be similar to the previously stated results, and the signs of coefficients for both dependent variables remain unchanged.

Overall, the estimation results show that the ratio of total SI contribution to total wage fund is negatively correlated to the average wage per firm (ω) and positively correlated to the average number of workers per firm. Accordingly, with the fixed effects of ownership type, industry and firm size, a 1 percent increase in the ratio of total SI contribution to total wage fund would result in reductions of 0.091 percent, 0.074 percent and 0.075 percent, respectively, in average wage per firm. This implies that an increase in SI contributions would induce firms to reduce the average wage. In contrast, adding the fixed effects,

a 1 percent increase in the ratio of total SI contribution to total wage fund would result in increases of 0.0706 percent, 0.013 percent and 0.054 percent, respectively, in the average number of workers per firm. In terms of absolute impact, this is trivial.

Table 8.9: Impact of rise in SI contributions on firms' wages and employment (fixed effects)

	Average wage per firm	Average workers per firm	Average wage per firm	Average workers per firm	Average wage per firm	Average workers per firm
Coefficient	-0.00091*** (0.00010)	0.00071*** (0.00018)	-0.00074*** (0.00010)	0.00128*** (0.00018)	-0.00075*** (0.00010)	0.00053*** (0.00013)
Female	-0.00124***		-0.00073***		-0.00078***	
Other control variables						
Firm type fixed effects	Yes	Yes				
Sector fixed effects			Yes	Yes		
Firm size fixed effect					Yes	Yes
Observations	197,559	197,559	197,559	197,559	197,559	197,559

Notes: * 10%, ** 5%, *** 1% statistical significance level. Standard errors are in brackets.

Source: Authors' calculations using data from GSO surveys 2006–13

8.5 Conclusions and policy implications

Using data from Enterprise Surveys 2006 to 2013, both descriptive and econometric analyses were carried out to find evidence of the impact of SI contributions on labour demand and average wages. As expected, the results indicate that compulsory SI contributions do have an impact on wages and employment.

As stated, the impact of SI contributions on labour demand and wages was studied by quantitative analysis and is explained by the ratio of firms' total SI contribution to total wage fund. The results indicate that the average wage per firm is negatively correlated to the ratio of total SI contribution to total wage fund. On the other hand, the average number of workers per firm is positively correlated to that ratio.

The impact was also examined from other perspectives such as ownership type, the proportion of female workers, firm size and industrial sector. The analysis shows that the average wage per firm is negatively affected by SI contributions in all ownership sectors. The impact is stronger in the SOE sector than in FDI and domestic private sectors. These results suggest that for SOEs,

the impact of any SI contribution increase should be carefully examined. The results also show that an increased share of SI contributions in the total wage fund negatively affects labour demand in SOE and FDI sectors, but positively affects employment in the private sector. However, all of these impacts are small, showing that labour demand is hardly affected by SI contributions. This may be due to a number of reasons, such as the SI contribution accounting for a small share of total production costs or labour demand being affected by many other factors. Another explanation may be the small size of enterprises. The policy implication here is that the government cannot use SI policy to influence demand in the labour market.

The situation is a little different when it comes to the impact on firms within different industries. The results indicate that the average wage per firm is negatively affected by the SI contribution in all three studied industries, and this direction of impact is very similar to the results for “all firms”. However, the impact of an SI contribution increase is significantly higher in the shoe industry than in the textile and garment sector and other industries. This implies that the reaction of labour-intensive industries to the SI contribution is not the same. The impact of SI contributions on labour demand is also much higher in the shoe industry. This suggests that SI policies may have different employment effects in different industries. This leads to the thought that to achieve policy targets, the government can rely on industrial development priorities to adjust these policies.

Firm size also affects behaviour in response to an increase in the SI contribution. Microenterprises react more strongly. This may be because they are more vulnerable to the increased non-wage labour cost. The extent of this impact declines as the scale of enterprises increases. The impact of the SI contribution on labour demand is positive for the two groups of smaller enterprises, perhaps because small firms can choose to expand business to compensate for the increased SI contribution. However, to prevent an adverse impact on wages caused by the negative reactions of employers, this effect should not be underestimated.

The impact of gender was revealed by the results indicating that, in the event of an SI contribution increase, the proportion of female workers barely affects the average wage per firm. This implies that firms with different gender shares of labour do not show significantly different behaviour in setting wages or recruitment policies. It is therefore recommended that SI policy does not need to have specific stipulations for female labour-intensive industries.

There is good evidence from previous studies indicating that an SI contribution increase has induced firms, especially in the private sector, to react in different ways. Wage cutting and using less labour under compulsory

SI, tax fraud and under-reporting of wages are reportedly quite widespread among firms. Given the big changes in government policy that increased the base for SI and health contributions (requiring a larger contribution from both employers and employees), effective since January 2016, these practices may become more prevalent. Thus it is strongly recommended that, to increase participation and ensure SI system viability, broader and more fundamental reforms, not just in SI but also in other policies, should be undertaken. If employees are not aware of their legal rights and employers do not respect the law, then stronger law enforcement and more frequent public advocacy campaigns should be conducted. Close cooperation with the Tax Inspectorate could help significantly in this matter.

In sum, the policy on increased SI contributions in Vietnam has different impacts on wages and labour demand in various firm types. While the impact on employment is positive, the increase in SI contribution negatively affects the price of labour. These differences are found in enterprises of different ownership types, industrial sectors, firm sizes and gender proportions. As the population of Vietnam is ageing, the SI fund needs to be supplemented, and SI contributions will need to be increased accordingly. However, because of the possible adverse effects and practices outlined above, any change to SI policy should be carefully examined and evaluated to consider potential unintended consequences and to predict more accurately which policy responses are most appropriate so that a more optimal SI contribution level is identified and effectively implemented.

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Annex

Table A1: Variable definitions

Variables	Definition
<i>Lnw</i>	Natural logarithms of average wage
<i>Ts</i>	Share of total SI contribution to total wage fund (%)
<i>dnnn</i>	Firm type: <i>dnnn</i> =1 if enterprises are SOEs, =2 if enterprises are private sectors, =3 if enterprises are FIEs.
<i>dndm</i>	Sector: <i>dndm</i> = 1 if textile and garment sector, =2 if leather and shoes sector, otherwise =3.
<i>DNSN</i>	Firm size: <i>DNSN</i> =0 if enterprises have fewer than 10 workers, =1 if 10 to 50 workers, =2 if 51 to 100 and =3 if more than 100 workers.
<i>ldBHXH</i>	Rate of labour SI contribution compared to firm's total labour income (%)
<i>ttBHXH</i>	Total amount of firms SI contribution for labour (VND million)
<i>E</i>	Total labour of firms at the end of year
<i>Fem</i>	Share of female workers in firms (%)

Table A2: Descriptive statistics for SI contribution rate, average wage and average total employment

Year	Observations	SI contribution rate	Log of average wage	Log of average total employment
2006	29,820	6.26 (9.94)	2.92 (0.75)	3.62 (1.4)
2007	29,820	7.20 (20.20)	3.10 (0.73)	3.70 (1.40)
2008	29,820	7.00 (10.32)	3.73 (1.39)	3.32 (0.73)
2009	29,820	8.92 (56.32)	3.49 (0.68)	3.72 (1.40)
2010	29,820	7.72 (68.16)	3.61 (0.68)	3.68 (1.45)
2011	29,820	9.50 (123.86)	3.59 (0.74)	3.62 (1.47)
2012	29,820	9.55 (118.77)	3.73 (0.73)	3.55 (1.52)
2013	29,820	7.74 (6.78)	3.82 (0.70)	3.46 (1.57)

Note: Standard deviations are in brackets.

Table A3: Average rate of SI contribution, number of workers contributing and total contribution of firms, by type of enterprise, size of workforce and industrial sector

Enterprises	Average rate of SI contribution (%) compared to wage	Average rate of workers contributing to SI (%)	Average total contribution to SI (million dong)
SOEs	12.90	89.85	2187.19
Private enterprises	7.06	51.30	329.72
FIEs	10.38	84.79	2246.98
<10 workers	5.01	39.40	12.94
10 to 50 workers	7.29	55.80	79.76
51 to 100 workers	9.68	62.33	288.05
>100 workers	9.60	70.75	2,191.53
Textile and garment enterprises	13.41	72.84	1,037.23
Shoe and leather enterprises	8.72	76.97	6,481.95
Other enterprises	8.12	59.50	713.25

Source: GSO surveys 2006–13

Table A4: Coverage by components of SI system

Scheme	Persons covered	Issues
Compulsory	15 million (20% of total force)	Participation rate low in non-state enterprises (evasion of SI contributions, loose sanctions and insufficient awareness of workers)
Voluntary	150,000	Low participation; monthly contributions too high compared to willingness to pay; communication is weak

Source: MOLISA 2013

Table A5: Coverage of SI by ownership type (%)

	2006	2007	2008	2009	2010	2011	2012	2013
SOEs	87.96	88.89	89.63	90.10	88.50	88.98	90.05	89.92
Private enterprises	34.66	37.73	39.28	33.08	40.73	39.44	41.11	41.60
FIEs	77.29	78.92	80.89	79.69	78.69	72.56	77.44	76.51
Enterprises with more than 50% female workers	65.85	68.12	69.28	55.55	71.19	70.52	74.58	73.31
Enterprises with fewer than 50% female workers	50.19	50.03	50.66	53.56	47.81	48.80	49.13	48.00

Source: Author's calculations using data from GSO surveys 2006–2013

Table A6: Total labour and annual SI contributions per firm (VND million) by ownership

	Unit	2006	2007	2008	2009	2010	2011	2012	2013
SOEs	Workers/firm	491.48	401.12	423.77	470.82	391.01	485.61	496.20	450.22
	SI/firm	854.62	920.74	1264.71	1,728.38	3,675.94	3,075.96	3,268.97	3,396.81
Private enterprises	Workers/firm	27.48	26.90	24.05	22.04	22.23	21.41	20.20	19.14
	SI/firm	20.29	28.09	32.41	40.45	46.75	98.54	110.65	72.28
FIEs	Workers/firm	342.51	339.82	325.33	293.25	297.32	251.68	303.23	303.81
	SI/firm	625.81	672.12	917.24	997.76	1,562.34	1,429.23	2,128.67	2,432.48

Source: Authors' calculations using data from GSO surveys 2006–2013

Table A7: Average SI participation rate and average wage, by firm size

Size of firm	2006	2007	2008	2009	2010	2011	2012	2013
fewer than 10 workers								
SI participation rate (%)	14.73	16.73	27.50	34.42	32.95	17.81	30.94	32.52
Average wage (VND million)	17.86	22.54	29.88	35.02	43.54	36.21	52.02	51.53
10–49 workers								
SI participation rate (%)	39.23	45.31	45.37	55.39	40.20	40.93	37.91	38.44
Average wage (VND million)	22.51	26.99	34.42	41.84	47.57	45.26	52.4	55.96
50–100 workers								
SI participation rate (%)	53.68	56.97	58.16	57.49	56.45	51.04	54.51	51.32
Average wage (VND million)	23.57	28.07	39.39	45.18	56.82	51.99	56.68	63.09
more than 100 workers								
SI participation rate (%)	64.81	67.06	68.17	62.28	64.97	63.15	64.55	65.59
Average wage (VND million)	23.49	27.97	35.13	41.55	51.11	57.44	60.67	67.37

Source: Authors' calculations using data from GSO surveys 2006–13

Table A8: Average SI participation rate and average wage, by industry

	2006	2007	2008	2009	2010	2011	2012	2013
all industries								
SI participation rate (%)	56.59	57.68	58.03	54.50	56.74	57.54	58.96	58.27
Average wage (VND million)	19.10	23.64	31.52	40.58	45.16	43.54	52.70	53.80
textile and garments								
SI participation rate (%)	69.53	73.05	71.91	67.65	68.33	71.38	74.82	74.62
Average wage (VND million)	17.88	21.09	34.88	32.23	30.71	36.66	73.18	50.50
shoes and leather								
SI participation rate (%)	81.13	83.93	86.25	85.60	88.10	86.23	90.41	91.04
Average wage (VND million)	15.28	18.52	41.70	26.33	33.85	35.76	44.72	48.93
other								
SI participation rate (%)	53.75	54.69	55.26	51.85	53.95	54.93	56.10	55.07
Average wage (VND million)	19.44	24.01	31.45	40.93	45.30	40.60	52.60	53.84

Source: Authors' calculations using data from GSO surveys 2006–13