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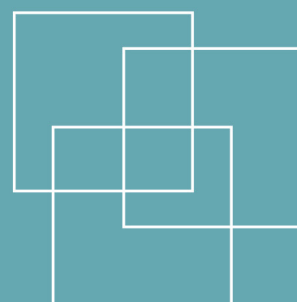


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SOCIAL PROTECTION AMONG --- VIETNAMESE SMES:

IMPLICATIONS FOR FIRM PERFORMANCE,
2012-16



SOCIAL PROTECTION AMONG VIETNAMESE SMES:

IMPLICATIONS FOR FIRM PERFORMANCE, 2012-16

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ABSTRACT

Mixed evidence has occasioned much debate regarding the relationship between job quality and firm performance. The evidence is particularly limited in the case of small and medium-sized enterprises (SMEs) in emerging economies. Focusing on the manufacturing and construction sectors, this paper investigates how, between 2012 and 2016, employer-provided social security affected firm performance in Viet Nam. The paper is based on enterprise census data covering all registered firms across the Socialist Republic of Viet Nam's 63 provinces during 2012–2016. Controlling for unobserved time-invariant firm-level characteristics, the results reveal that firms which increased social security coverage by 10 per cent experienced a per-worker revenue gain of between 1.2 and 1.5 per cent and a profit gain of up to 0.7 per cent, with exact estimates depending on the survival time of the firm. Due to the time-inconsistency between costs (social security contributions) and benefits (firm performance), the latter may not be realized immediately. Thus, specific policy measures such as subsidizing social insurance contributions for small firms during an initial period until the business becomes viable could encourage active participation in mandatory schemes.

CONTENTS

Abstract

Acronyms

1	Introduction	8
2	Theory, evidence and policy developments	10
3	Data	12
4	Estimation methods: A dynamic approach	19
5	Results	21
6	Conclusion	28

References

Tables and figures

Appendix

ACRONYMS

CP	collective/partnership
CSR	corporate social responsibility
FE	fixed effect
FIE	foreign investment enterprise
GDP	gross domestic product
GSO	General Statistics Office
GVAPW	gross value added per worker
HCMC	Ho Chi Minh City
HRM	human resource management
MOLISA	Ministry of Labour, Invalids and Social Affairs
OECD	Organisation for Economic Co-operation and Economic Development
OLS	ordinary least squares
PCI	Provincial Competitiveness Index
SD	standard deviation
SME	small and medium-sized enterprise
USAID	United States Agency for International Development
VA	value added
VASS	Vietnam Academy of Social Sciences
VCCI	Viet Nam Chamber of Commerce and Industry
VES	Viet Nam Enterprise Survey
VNCI	Viet Nam Competitiveness Initiative
VND	Vietnamese dong (national currency)
VSS	Viet Nam Social Security Fund

1

INTRODUCTION

Since 1986, when the Socialist Republic of Viet Nam began its transition from a centrally planned system to a socialist-oriented market economy, the country has witnessed average annual growth rates of more than 7 per cent. Poverty incidence has also fallen rapidly, declining by more than 40 percentage points between 1993 and 2006, for instance. That represents the fastest reduction in poverty ever recorded, even surpassing that of the neighbouring People's Republic of China.

This transformation has meant that Viet Nam, in the span of two decades, has upgraded its status from a least developed to that of a lower-middle-income country, and is today considered one of the most dynamic emerging economies in East Asia. Central to the on-going structural transformation is the growth of the private sector and its increasing share of employment and output. During the first seven years of reform, around 10 million private sector jobs were created. From 1993 to 1997, the number of registered private firms grew on average by 40 per cent per year. This private sector boom, which has occurred in spite of the general absence of market-supporting institutions, can be attributed almost solely to the entry of new small and medium-sized enterprises (SMEs), including an abundance of household firms. According to the Viet Nam Chamber of Commerce and Industry (VCCI), SMEs account for more than 97 per cent of total enterprises in Viet Nam, provide employment for more than 50 per cent of the workforce, and contribute to about 50 per cent of GDP (Le, 2011).

Despite their economic importance, SMEs are often characterized by poor working conditions, including limited social security coverage. Although this is particularly true for firms operating informally, non-compliance is also widespread in formal firms operating within the legal framework, not least when it comes to social protection for workers¹. In 2017, 60.3 per cent of all registered private enterprises contributed to the Viet Nam Social Security Fund (VSS)², thus around 40 per cent did not pay for workers' social protection despite the Government's strong commitment to promoting social protection as an engine of growth and development (MoLISA, 2010)³. This situation raised concerns that VSS could run into deficit by 2021⁴. Partly in response to this, the revised Social Insurance Law (2014) set out to close the lump sum withdrawal option (article 60), which had allowed employees to withdraw part of their pension contributions prior to retirement. In response to this proposed change, however, massive strikes involving about 90,000 workers swept through Viet Nam in early 2015 and, because of this pressure, the Government suspended application of article 60.

A number of factors have contributed to the compliance gap noted above, including lack of regulatory knowledge and weak enforcement mechanisms, which hinder government implementation of the relevant laws. Moreover, the dynamic environment in which SMEs operate often means that they are tempted to adopt short-sighted strategies, given that

¹ In addition to firm non-compliance, temporary workers with contracts extending less than one month were excluded from social security regulation. Prior to 2018, the latter included workers with contracts of less than three months.

² The participation rate varied substantially across firm types, with 60.3 per cent of private firms contributing compared with 94.6 per cent of foreign investment enterprises (FIEs) and 99.8 per cent of state-owned enterprises (ILO calculations from the enterprise survey 2017).

³ See Bonnet et al. (2012) for an earlier overview and assessment of Viet Nam's social protection strategy.

⁴ According to more recent ILO assessments, however, the social insurance fund will prove sustainable until 2070, given that the Government is working on social insurance reform (see Resolution No. 28 NQ/TW, May 2018).

the costs of longer-term investments such as social security contribution are perceived as outweighing any potential benefits. This tendency can be compounded by the difficulty of assessing the magnitude of such possible benefits in contrast with calculating the immediate and clear costs.

Against this background, this paper examines the relation between social security provision and firm-level performance among SMEs in Viet Nam, based on enterprise census data (covering all formally registered firms) from 2012–16. This paper follows on from Lee and Torm (2017) which focused on the same topic and used the same methodology on the same data source but with reference to the period 2006–11. Lee and Torm (2017) found that firms which increased their social security coverage (share of workers receiving social security) by 10 per cent saw the average annual revenue per worker increase by between 1.4 and 2.0 per cent and the average annual profit per worker rise by as much as 1.8 per cent. In comparison, the current study finds that firms that increased social security coverage by 10 per cent experienced an increase in the average annual revenue per worker by between 1.2 and 1.5 per cent, and an average annual increase in profits per worker by up to 0.7 per cent. The slightly lower revenue and more markedly lower profit estimates reported in the current study might have been due to gradual increases in social security contributions in recent years. For instance, since January 2016, the basis on which the payment of compulsory social insurance is calculated was extended to include allowances on top of the basic salary, suggesting, at least in theory, an increase in contribution amounts⁵. Moreover, the implications of the Health Insurance Law, which came into effect in 2009, would not have been captured entirely by Lee and Torm (2017), especially since coverage and compliance had increased gradually between the latter and current studies. Nevertheless, according to the more recent data on which the current study is based, the positive relation between the provision of social security and firm-level gains established by Lee and Torm (2017) holds.

One plausible channel through which this relationship emerges is the enhanced motivation of the workforce. Yet there is time-inconsistency between costs (social security contributions) and benefits (firm performance) in that the benefits may not be realized in the immediate term. As such, inconsistency cannot be easily resolved at an individual firm level, and well-targeted policy interventions are critical.

The rest of this paper is structured as follows:

- **Section 2** provides an overview of the relevant literature and recent policy developments in Viet Nam.
- **Section 3** presents the data and related descriptive statistics.
- **Section 4** outlines the estimation methods.
- **Section 5** presents the main results with a range of robustness checks.
- **Section 6** concludes with a summary of key findings and their policy implications.

5 As specified in clause 2, article 4, of Circular No. 47/2015/TT-BLĐTBXH, allowances are meant to either compensate for unfavourable working conditions, the complex nature of work, unfavourable living conditions, or to incentivize workers for duties not included in the agreed salary under the employment contract..

2 THEORY, EVIDENCE AND POLICY DEVELOPMENTS

According to standard economic theory, policy “shocks” such as new social security laws can create tensions between employers and employees, potentially leading employers to minimize costs in relation to employment.⁶ These policy changes, it is typically assumed, impact only labour demand while possible impacts on productivity (hence labour supply) are not considered. Thus, firms may not perceive improved working conditions as a worthwhile investment. This may be particularly true for SMEs, which generally operate in an environment characterized by high entry and exit rates, and which, compared with larger firms, are often faced by more serious internal constraints. Moreover, in emerging economies in particular, working conditions may remain unregulated by law, and, even where they are regulated, monitoring of compliance tends to be relatively weak. In the presence of positive supply-side impacts such as enhanced worker motivation due to social security provision, this can create a more optimal working environment, in turn stimulating firm performance.

A large body of studies examines the relationship between working conditions and firm performance (for an overview, see Coucher et al., 2014).

Resource-based view.



According to the resource-based view, superior financial performance may be a result of management treating its employees as valuable assets (Barney, 1991). This view emphasizes the development, use and protection of existing competencies, thus pointing to potential gains associated with protecting the workforce.



Dynamic capabilities.

The dynamic capabilities concept similarly highlights the ability of SMEs to “integrate, build and reconfigure internal and external competencies to address the rapidly changing environments” (Teece et al., 1997).

Bundles of human resource management practices.

A fair amount of work within human resource theory addresses bundles of human resource management practices (HRM bundles). HRM bundles have been shown to synergistically improve firm performance in ways substantially greater than individual best practices (Boselie et al., 2005; Ferris et al., 2004; MacDuffie, 1995). While the specific compositions of the bundles may vary, the literature identifies three broad bundle categories: (a) empowerment enhancing; (b) motivation enhancing; and (c) skill enhancing.⁷ Motivation-enhancing practices such as provision of health care and other employee benefits, performance-linked pay, and incentive plans

⁶ See Kaufman (2004) for a comprehensive account of the evolution of the industrial relations field dating back to neoclassical theory.

⁷ Subramony (2009) provides a detailed description of the concept of HRM bundles based on a meta-analysis of 65 empirical studies linking HRM bundles to firm performance.



have been found to affect business outcomes through higher effort levels as employees are adequately rewarded for their performance (Stajkovic and Luthans, 2003.⁸ Social security provision thus belongs to the “motivation-enhancing bundle”, and may play an important role in terms of improved firm performance. Evidence in this regard has however been limited mostly to industrialized countries (Subramony, 2009; Coucher et al., 2014).

In light of this, Viet Nam provides an interesting case for studying multiple and dynamic impacts of working conditions. Government policies have focused on the improvement of social protection systems, including mandatory social insurance, as specified in both the initial Social Insurance Law (2007) and the revised 2014 version. This law applies to workers on written contracts of more than one month, and mandates employers to pay social security contributions to the VSS.⁹ Workers are in turn entitled to sick leave, maternity allowance, pension, mortality allowance and compensation for work-related accidents and occupational diseases.¹⁰

In 2018, health insurance covered 86.6 per cent of the population (81.3 million people), and social insurance extended to 25.8 per cent of the labour force (13.82 million),¹¹ compared with 18 per cent of the labour force in 2008 (ILO/MoLISA, 2010). Introduction of the Social Insurance Law has thus appeared to increase coverage. However, when contributions were paid they generally did not correspond to the rates specified in law.¹² For instance, Thanh and Castel (2009) found that the average social insurance contribution rate ranged around 7.6 per cent of current wages. This mismatch might have been due to factors such as the following: (1) underreporting wages; (2) paying social insurance based on the minimum wages rather than the actual (base) wage; and (3) not registering all the employees with the VSS.

Interestingly, it has been argued that workers actually colluded with employers to evade social insurance contributions, aiming to receive higher net wages rather than pay into social/health insurance funds. Moreover, insufficient awareness among firms and workers, as well as low incentives and complicated regulations, were often cited as major reasons for low compliance (Giang, 2010; VASS, 2011).¹³

Existing work on the social security scheme in Viet Nam is generally descriptive, and looks mostly at the associated challenges, including limited coverage, low benefit levels and longer-term financial sustainability issues. Evidence regarding the implications of social security for firm-level outcomes is generally lacking.

⁸ Relatedly, based on the notion of employment as social exchange (Blau, 1964), the availability of motivations such as pay, benefits, and internal mobility can lead employees to perceive their organization as valuing their contributions (Allen et al., 2003; Rhoades and Eisenberger, 2002). This may in turn encourage a positive attitude among employees (Wayne et al., 2002), subsequently improving firm performance in terms of productivity and sales (Schneider et al., 2005). Along the same lines, social equity theory argues that increased productivity depends not just on individual efforts, but also on effective interaction among workers and between management and workers (Buchele and Christiansen, 1999).

⁹ All firms (foreign and domestic) registered under the Enterprise Law (2005), including individual business households, are mandated to participate in the compulsory social insurance scheme. Thus, there is no size threshold below which firms are exempt.

¹⁰ In addition to the compulsory component, the Social Insurance Law also encompasses provisions for voluntary health and social insurance targeting informal economy workers.

¹¹ Based on a VSS report (2018), in Vietnamese, <http://www.molisa.gov.vn/vi/pages/chitiettin.aspx?IDNews=27994>, accessed [12 Apr. 2019].

¹² From 2010 to 2016, the total mandatory social insurance rates (covering pension, health and unemployment) went up from 19 per cent of the current wage for employers and 7.5 per cent for employees, to 21.5 per cent and 10.5 per cent, respectively, i.e. a total increase from 26.5 to 32 per cent.

¹³ Nevertheless, compared to other countries in the region including Malaysia, the Republic of Singapore and the Kingdom of Thailand, Viet Nam's social expenditure ratio is quite high, reflecting the relatively high share of state-owned enterprises in the economy (ADB, 2013).

3 DATA

The data originate from the Viet Nam Enterprise Survey (VES), which the General Statistics Office (GSO) has undertaken annually since 2000. Their coverage is comprehensive, including all firms with more than 30 employees and a sample of smaller firms operating under the Vietnamese enterprise law (2000) across the 63 provinces.¹⁴ However, the very nature of the survey means it excludes a substantial number of SMEs in the informal economy,¹⁵ though this is not a matter for concern in this context, since these informal firms do not fall within the scope of compulsory (formal) social insurance provision. For the purpose of the current study, it was decided that only manufacturing and construction sector firms would be selected for meaningful analysis with clear policy implications. These firms taken together account for more than 40 per cent of total non-agricultural employment in Viet Nam (GSO, 2012).¹⁶ Data from 2012–16 have been used, since 2016 was the most recent year for which they were available, and 2011 was the last year considered in Lee and Torm (2017).



Data samples and key variables

The primary indicator for measuring social security investment within a given firm is share of workers receiving social security in accordance with the relevant provisions of the Social Insurance Law 2007 (henceforth “social security coverage”), as described earlier. This indicator can be seen as one way of measuring the degree of formalization within officially registered firms. Available evidence regarding Vietnamese household firms has shown that, when firms join the formal sector, they earn higher profits and employ more permanent workers (Rand and Torm, 2012). Indeed, a primary purpose of this study is to examine the benefits of more formalized conditions for workers within formally established firms.

Firm performance is measured by total revenues and profits per worker. However, given the high entry and exit rates among SMEs, the study also considers the survival rates of firms (explained below). Throughout, it controls for standard firm characteristics that affect both social security provision and firm performance, and the panel data structure (tracking firms over time) makes it possible to take account of unobserved firm-specific features which may bias

14 Household firms are registered at the district level and, as such, do not enter into the census. According to Decree No. 88/2006/ND-CP of 29 August 2006 on business registration, when a firm has more than ten employees and/or uses more than one business premise, it may no longer operate as a household firm and should be registered as a company under the Enterprise Law (2005).

15 The World Bank definition of SMEs, used in this study, describes micro-enterprises as those with between one and ten employees, small-scale enterprises as those with between 11 and 50 employees, and medium-scale enterprises as those with between 51 and 300 employees. The Vietnamese Government (see Government Decree No. 90/2001/CP-ND on “Support for Development of Small and Medium Enterprises”) broadly accepts these definitions. In order to capture firm dynamics, this study does not exclude firms categorized as “large” (with 300 employees or more) in any one year. 16 The World Bank definition of SMEs, used in this study, describes micro-enterprises as those with between one and ten employees, small-scale enterprises as those with between 11 and 50 employees, and medium-scale enterprises as those with between 51 and 300 employees. The Vietnamese Government (see Government Decree No. 90/2001/CP-ND on “Support for Development of Small and Medium Enterprises”) broadly accepts these definitions. In order to capture firm dynamics, this study does not exclude firms categorized as “large” (with 300 employees or more) in any one year.

16 This study categorizes firms by industrial sector according to the Viet Nam standard industrial classification 2007 based on ISIC revision 4 (GSO, 2007).

the results. After retaining only manufacturing and construction sectors and dropping observations with missing and/or inconsistent information on key variables, as well as removing outliers (see appendix A for the data-cleaning procedure), the balanced panel from 2012–2016 contains 85,020 firm observations (17,004 firms per year; see table 1). Considering only surviving firms, and excluding new firms that enter the survey, means that over time the number of firms present in one year is reduced, as some firms exit, while of course the total number of observations nevertheless increases. The analysis will examine all four periods presented in table 1, yet in some cases the results presented will only reflect the balanced panel for the entire time period (2012–16).

Table 1

Number of firms which survive (balanced panel for each period)

Periods	2012	2013	2014	2015	2016	Total
1	28 647	28 647				57 294
2	23 609	23 609	23 609			70 827
3	19 759	19 759	19 759	19 759		79 036
4	17 004	17 004	17 004	17 004	17 004	85 020



Descriptive statistics

Table 2 provides summary statistics of all the variables used in the analysis based on firms that have survived in all four periods: 2012–16 (table 1, last row).¹⁷

Table 2

Summary statistics

	All Mean	SD	2012 Mean	SD	2013 Mean
Social security coverage (lagged)	0.53	0.35	0.50	0.40	0.53
Revenue (mill. VND)	660.76	1 374.92	576.23	1 209.30	602.10
Profits (mill. VND)	9.70	58.93	8.98	47.37	7.56
Firm size	176	718.52	164	634.53	171
Micro	0.21	0.40	0.20	0.40	0.20
Small	0.37	0.48	0.37	0.48	0.37
Medium	0.31	0.46	0.31	0.46	0.31
Large	0.12	0.32	0.11	0.32	0.11
Private company	0.07	0.25	0.07	0.25	0.07
Collective/Partnership (CP)	0.01	0.11	0.01	0.11	0.01
Limited liability	0.54	0.50	0.53	0.50	0.54
Joint stock	0.22	0.42	0.22	0.42	0.22
Foreign	0.16	0.37	0.16	0.37	0.16
Firm age	9.07	14.67	7.07	14.60	8.07
Urban	0.19	0.39	0.19	0.39	0.19
Rural	0.81	0.39	0.81	0.39	0.81
North	0.35	0.48	0.35	0.48	0.35
South	0.65	0.48	0.65	0.48	0.65
Manufacturing – low VA	0.20	0.40	0.20	0.40	0.20
Manufacturing – medium VA	0.38	0.48	0.38	0.49	0.38
Manufacturing – high VA	0.14	0.35	0.14	0.35	0.14
Construction	0.28	0.45	0.28	0.45	0.28
Females (pct. share)	0.36	0.23	0.37	0.23	0.36
Average income (mill. VND)	51.70	20.00	51.46	19.75	51.54
Average social security (mill. VND)	5.24	5.69	3.97	3.89	4.60
Observations	85 020		17 004		17 004

Notes: SD = Standard deviation. Real financial variables deflated with national GDP deflator (base year 2012).

¹⁷ Descriptive statistics for the other samples reveal no major differences in the variable distributions. Results are available upon request.

SD	2014 Mean	SD	2015 Mean	SD	2016 Mean	SD
0.33	0.55	0.33	0.54	0.33	0.53	0.33
1 170.09	645.89	1 212.50	713.22	1 472.48	766.33	1 719.86
44.73	8.23	46.65	9.94	55.47	13.78	88.58
678.07	177	711.30	182	762	183	795.38
0.40	0.20	0.40	0.21	0.41	0.22	0.41
0.48	0.37	0.48	0.37	0.48	0.37	0.48
0.46	0.30	0.46	0.30	0.46	0.29	0.46
0.32	0.12	0.32	0.12	0.32	0.12	0.32
0.25	0.07	0.25	0.06	0.25	0.06	0.24
0.11	0.01	0.11	0.01	0.11	0.01	0.11
0.50	0.54	0.50	0.54	0.50	0.54	0.50
0.42	0.22	0.42	0.22	0.42	0.23	0.42
0.37	0.16	0.37	0.16	0.37	0.16	0.37
14.60	9.07	14.60	10.07	14.60	11.07	14.60
0.39	0.19	0.39	0.19	0.39	0.19	0.39
0.39	0.81	0.39	0.81	0.39	0.81	0.39
0.48	0.35	0.48	0.35	0.48	0.35	0.48
0.48	0.65	0.48	0.65	0.48	0.65	0.48
0.40	0.20	0.40	0.20	0.40	0.20	0.40
0.48	0.38	0.49	0.38	0.48	0.37	0.48
0.35	0.14	0.35	0.14	0.35	0.15	0.35
0.45	0.28	0.45	0.28	0.45	0.28	0.45
0.23	0.36	0.22	0.36	0.22	0.37	0.24
19.63	51.60	19.71	51.88	20.32	52.03	20.57
3.62	5.05	3.99	5.69	4.46	7.08	9.99

17 004

17 004

17 004

First, the (lagged) share of workers receiving social security, which is the main variable of interest, was 53 per cent on average and stable over time. The share is slightly higher compared with Lee and Torm (2017),¹⁸ and substantially higher than the 18 per cent reported for national estimates of mandatory social insurance compliance in 2008 (ILO/MoLISA, 2010). Yet the latter included informal economy workers, which are not included in the current analysis.

Turning to the outcome variables, real net revenue per worker was 661 million Vietnamese dong (VND) per annum (about US\$28,480) and showed an increasing trend over time.¹⁹ Second, real gross profit per worker was on average VND9.7 million (US\$418) per year, and generally rose over time except for a slight dip in 2013.

The following control variables are introduced in all the specifications: firm size; legal status; firm age; location; sector; female share; average wage; previous performance; and capital-labour ratio.

Firm size.

Rauch (1991) extended Lucas' model (1978) of the firm size distribution with heterogeneous workers to show that, when larger firms faced higher unit-input costs, the most talented entrepreneurs tended to operate larger firms to exploit their productive advantage, in turn generating higher profits. Higher input costs might include, for instance, social security or other non-wage costs. Therefore the log of the number of regular fulltime employees has been included to ensure that any association between social security contribution and firm performance was not driven by firm size. Moreover, firm size might to some extent capture any ability bias arising if, in accordance with Rauch (1991), the more skilled entrepreneurs were also the ones setting up larger firms. Table 2 shows that the average size of the firms was 176 full-time employees, and this rose over time with the exception of the last period, in which firm size remained constant yet revenue rose and therefore profits were higher. In terms of firm size categories, micro-firms (fewer than ten employees) made up around 20 per cent — an increase from 15 per cent compared with Lee and Torm (2017), indicating that micro-firms were becoming more prevalent and were surviving longer. Similarly, the share of small firms (between ten and 50 employees) rose slightly, from around 34 per cent to 37 per cent. By contrast, medium firms (between 50 and 300 employees) and large (more than 300 employees) comprised smaller shares at 31 and 12 per cent, respectively, compared with 36 and 15 per cent in Lee and Torm (2017). This increase in the presence of micro-and smaller firms is in line with a lower average firm size in the current study, compared with Lee and Torm (2017). During the period 2012–16, the shares remained relatively stable.

18 In Lee and Torm (2017), the average social security share was 52 per cent, ranging from 42 per cent in 2007 to 56 per cent in 2011.

19 The use of gross value added per worker (GVAPW) as the productivity measure is intentionally avoided, since the social security contribution, in theory, is linked to the wage level (which is part of GVAPW). The VND–US\$ exchange rate (as of 12 Apr. 2019) was 1US\$ = VND23,205.49.

Legal categories.

Five legal categories are used to account for performance differences across different ownership structures. Social security compliance, in this study and others, has also been shown to vary considerably with legal status: domestic private firms, limited liability companies, and collectives generally have a substantially lower rate of participation, compared with both joint stock and foreign firms (VASS, 2011). Overall, firms involved in foreign trade have greater exposure to global initiatives such as corporate social responsibility (CSR) and are thus more likely to comply with related regulations.²⁰ Table 2 shows that limited liability companies constituted the largest category with around 54 per cent, followed by joint stock companies (22 per cent), foreign companies (16 per cent), private firms (7 per cent) and, finally, collectives/partnerships (CPs) (1 per cent). The ratios remained stable over time.

Age of the firm.

The age of the firm has been found to be important in terms of both performance (Tybout, 2000) and social security participation (VASS, 2011). In terms of the latter, newly established firms might have been less aware of the regulatory framework or deliberately delayed paying social insurance contributions in order to reduce operating costs during start-up. The average firm age was nine years, obviously increasing with time.

Location.

Sixty-three province indicators were included to account for the fact that Vietnamese provinces are relatively autonomous, and have implemented centrally planned initiatives with different pace and enthusiasm (Nguyen et al., 2007), a feature also well documented in the Provincial Competitiveness Index (PCI) cited in Malesky (2012). This also seeks to capture any price differences across regions. Table 3 shows that 81 per cent of firms were located in rural areas, 10 per cent fewer than in the previous period of 2006–11 (Lee and Torm, 2017) indicating that urban firms were accounting for a larger share of the firm population.²¹

Sector.

Sector dummies have been included to account for productive differentials across industries. Moreover, in Viet Nam participation in the social security scheme has been found to be particularly low in the construction sector due to its high proportion of temporary workers (VASS, 2011). The summary statistics show that medium value-added manufacturing accounted for about 38 per cent of firms, low value-added represented 20 per cent, and high value-added 14 per cent.²² Moreover, 28 per cent of firms operated in construction. These shares were stable over time, yet within each grouping there was some variation. Thus the empirical analysis includes the full set of 21 sector dummies in all the specifications.

²⁰ Zhu et al. (2008) also found that ownership structure was an important determinant of human resource practices more generally.

²¹ Note that the results remain qualitatively similar if district-level indicator variables are introduced instead of province variables.

²² Low value-added sectors included food and beverages, tobacco, textiles and apparel, leather and wood and paper. Medium value-added sectors included publishing and printing, refined petroleum, chemical products and pharmaceuticals, rubber, non-metallic mineral products, basic metals, fabricated metal products, electronic machinery, computers, radio, TV, and motor vehicles. High value-added sectors included other transport equipment, furniture, jewellery, music equipment, watches, toys and medical equipment.

Share of female employment.

The share of female workers is included to account for gender-attributed productivity differentials, which are particularly common in developing countries (Jones, 2001; Hellerstein and Neumark, 1995).

While some studies found that the gender wage gap was related to variations in labour market experience across gender (Altonji and Blank, 1999; Blau and Kahn, 2006), others pointed to gender differences in attitudes towards competition.²³ Yet another interpretation is that the wage gap reflected discrimination against women in the labour market.²⁴ Moreover, the provision of social security may vary across gender, since female owners have been shown to be more generous in the provision of non-wage benefits (Rand and Tarp, 2011). The summary statistics reveal that the proportion of women was 36 per cent and stable over time.

Average income.

Average real income per worker is introduced, given that social security contributions are linked to income level (basic wage plus allowances).²⁵ Since there is a ceiling on the salary used for calculating contributions, this might have caused firms to alter the composition of their workforce.²⁶ Table 2 shows that average (per worker) real income was VND51.7 million (\$2,229) per year and rising marginally over time. Including income should also account for any correlation between the average educational level in the firm (which we did not observe directly) and productivity (Lucas, 1988). In other words, average income acts as a proxy for the general quality of the workforce. To reduce multicollinearity caused by linkage of income to both social security provision and firm performance, we use the district average (per worker) income grouped by industrial sector and firm-size category.

Average (per worker) real social security contribution.

This amount is indicated at the bottom of the table. On average, firms contributed 10 per cent of worker income to social and health insurance, and this rose over time from around 7.7 per cent in 2012 to about 13.5 per cent in 2016 (the year in which the basis for contributions included allowances on top of the basic salary). Nevertheless, the contribution rate remained substantially lower than that mandated by law, which in 2016 was 21.5 per cent for employers and 10.5 per cent for the employee. This mismatch between *de jure* and *de facto* contributions was also found in earlier studies (Thanh and Castel, 2009).

23 For instance, Dohmen and Falk (2010) and Niederle and Vesterlund (2007) found that women generally avoided variable pay schemes that tended to raise productivity.

24 Hellerstein et al. (1999) found that the US gender wage gap was not attributed entirely to productivity differences. In the case of Viet Nam, Liu (2004) found that the observed gender wage gap during the 1990s was attributable in large part to workplace discrimination against women.

25 Lee and Torm (2017) used the average wage, yet since 2014 only the total income measure (wages plus allowances) was available, and thus was used in the current analysis. Moreover, after 2016 the social security contribution was based on the total income, rather than just the base wage.

26 The “maximum contribution salary” is fixed at 20 times the minimum wage, beyond which no more social insurance contribution will be made. Therefore, the maximum contribution depends on the minimum wage, which is regularly adjusted by the Government. Depending on the region, the minimum wage ranged between VND1.65 million and VND2.35 million (\$71–\$101) in 2013; between VND2.15 million and VND3.10 million (\$92.7–\$133.6) in 2015; and between VND2.4 million and VND3.5 million (\$103.4–\$150.9) in 2016. Thus, the income reported here was substantially greater than the minimum wage.

4

ESTIMATION METHODS: A DYNAMIC APPROACH

To address the relationship between social security coverage and firm performance, this study applies a dynamic approach, starting from the premise that firm survival time may be important in grasping the relation between social security and firm outcomes.

In fact, considering the highly dynamic environment in which typically SMEs operate, a small firm might embrace survival as its priority objective rather than, for instance, maximizing profit. Thus, in the context of weak regulatory enforcement, a newly established firm might be tempted to evade extra labour costs such as social security contributions, since any potential benefits are unlikely to be reaped in the short run.

To observe such potential patterns, this paper makes use of panel data, as described in the previous section, tracking firms over time. Given the possibility that social security provision might affect firm survival, it is important to estimate it empirically before proceeding to analyse the balanced panel, which retains only firms that survive throughout the period under consideration. Therefore, this study applies the following equation in estimating the extent to which social security and other key variables were associated with the survival of the firm:

$$(i) P(Survival_{t,t+j} | x_{t-1})$$

where $j=1,2,3$ and 4 refers to survival over 1,2,3 and 4 consecutive years observed in a previous period. In addition to the main variable of interest – the share of total workers receiving social insurance – the set x_{t-1} contains variables that affect survival including firm size, legal status, location, sector, workforce characteristics, and previous performance.

Next, the analysis narrows to only the firms that survived, applying the following equation to estimate the relation between social security provision and both labour productivity defined as net revenue per worker and profits:

$$(ii) \ln Y_{jt} = \alpha + X_{jt-1}\gamma + S_{jt-1}\delta + \varepsilon_{jt} | Survival_{t,t+j}$$

where the log of (real) net revenue/gross profit per worker at firm j ($\ln Y_{jt}$) at time t depends on a vector of firm-level covariates (X_{jt-1}) that affect (a) either firm performance or the provision of social security, or both; (b) the share of the workforce covered by social security contributions ($S_{jt-1}\delta$); and (c) a firm-level error component.

All that is conditional on firm survival in periods $t+j$, where $j=1,2,3,4$. In other words, equation (ii) is estimated using subsequent samples that contain firms, which given existence in the first period, had survived over 1 wave, 2 waves, 3 waves, and 4 waves. It is thus revealed how the coefficient associated with ($S_{jt-1}\delta$) changes with respect to (real) net revenue

per worker and (real) gross profit per worker when comparing across samples that survive over subsequently longer time periods. To allow for time lag, the lagged value of the variable of interest (workforce share receiving social security at the end of previous survey year) is used, as well as the lagged values of the explanatory variables as outlined in the previous section: firm size, female share, average wages, and past performance.²⁷

In addition to pooled ordinary least squares (OLS) estimation, the analysis also controls for fixed effects to address bias that may arise from unobserved firm heterogeneity such as owner ability, which may influence both performance and social security provision. Moreover, as with any analysis of repeated observations over time, there is the possibility of autocorrelation, which could lead to biased results. To address this potential problem, throughout the analysis standard errors are clustered at the firm level, thereby allowing for intragroup (within firm) correlation over time.

Finally, year dummies are included in all specifications.²⁸

²⁷ Since performance expectations may affect both current performance and whether a firm decides to contribute to social security, the analysis includes, in all the specifications, a variable for previous performance (measured by lagged revenue and profits respectively).

²⁸ Appendix table B1 shows that larger firms with a higher share of female workers, located in rural areas, and with higher average income were more likely to contribute towards social security. Social protection was also associated with better-performing firms, and was higher among collectives/partnerships (CPs), limited liability companies, joint stock and foreign firms (compared with private firms). Moreover, all manufacturing sectors were more likely to contribute to social security compared with the construction industry. This was as expected, in line with Vietnam Academy of Social Sciences (VASS), 2011.

5

RESULTS



Firm survival

Applying equation (i), the probability of firms' survival was estimated across four consecutive periods given their existence in all previous years using a probit model,²⁹ where survival takes the value 1 if the firm survives in the subsequent year and 0 otherwise (the firm exits). For simplicity, table 3 presents results for firms that survive during the whole period from 2012–16.³⁰ Apart from social security coverage, the main variable of interest, control variables such as firm size, legal status, location, sector are included, as discussed above.

Table 3

Determinants of firm survival

	(1)	(2)	(3)
Social security	0.081* (0.048)	0.071 (0.049)	0.080 (0.050)
Firm size (logged)	0.195*** (0.011)	0.190*** (0.011)	0.201*** (0.012)
Collective/Partnership	-0.246** (0.124)	-0.281** (0.126)	-0.299** (0.125)
Limited liability	-0.134** (0.053)	-0.116** (0.054)	-0.111** (0.054)
Joint stock	-0.244*** (0.060)	-0.223*** (0.061)	-0.219*** (0.061)
Foreign	-0.212*** (0.074)	-0.181** (0.075)	-0.162** (0.075)
Rural	0.398** (0.156)	0.394** (0.156)	0.381** (0.156)
Firm age		0.007** (0.003)	0.006** (0.003)
Female share		-0.075 (0.084)	-0.060 (0.084)
Average income (logged)			-0.225*** (0.061)
Revenue (logged)			0.044*** (0.013)
Observations	19 355	19 355	19 355

29 A probit statistical model (from “probability” and “unit”) refers to a regression where the dependent variable can have only one of two values, in this case where a firm either survives or exits.

30 The number of observations in table 3 is higher than in table 1 last row (individual firm count, not the total), since in the former table non-surviving firms are included to provide a probit model of what determines survival. Thus, the number of observations is closer to the third row of table 1 (yet with a slight discrepancy, since some observations had to be dropped due to multicollinearity in the probit model).

Notes. Dependent variable is binary (firm survival=1, given existence in all previous years). Probit estimates, marginal effects. Robust standard errors clustered at the firm level (in parenthesis). Lagged values of revenue and are in real VND (base year 2012). For legal status, the reference category is private enterprise. Province, sector and year dummies included in all specifications. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In the first specification with a limited number of control variables, social security coverage was positively correlated with firm survival. As expected, in terms of the remaining variables firm size was highly correlated with survival, in line with Hansen et al. (2009), and supported by the increase in firm size over time in table 2. Secondly, private firms were significantly more likely to survive compared with other ownership types. Thirdly, again in accordance with Hansen et al. (2009), firms located in rural areas generally demonstrated a higher chance of survival due to the following factors: (a) fiercer competition in urban areas; and (b) substantial barriers to entry in rural areas, where local governments were generally more protective of existing firms.

Control variables are extended in the second and third specifications. The second specification introduces firm age and the share of female workers. The former is (logically) significant whereas the latter is not well determined. Yet, from the sign on the coefficient we see that firms with a higher female share were generally more likely to exit, suggesting that there might have been some unobserved gender-driven ability difference between surviving and exit firms.³¹ The third specification adds average income and past performance as measured by lagged real net revenue per worker. As expected, performance was positively correlated with survival. However, income was negatively correlated with survival, which differed from when the basic wage measure used in Lee and Torm (2017). Thus, it seems that allowances (as specified earlier in footnote 6) might impose a cost burden on firms. It is important to note that social security benefits were not included in such allowances.

Overall, it is reassuring to observe that social security costs did not seem to be driving firms out of business. Thus the study proceeds with the analysis of the relation between social security and firm performance by focusing exclusively on firms that survived during the entire period from 2012 to 2016.



Revenue and profit

The examination of how social security coverage affects firm performance now proceeds by estimating equation (ii) with two outcome variables: the log of (real) net revenue per worker, and real gross profit per worker. Social security coverage is lagged by one year to address the possibility of reverse causality (e.g. better-performing firms are simply the ones providing more social security). A set of control variables are included as specified in section 4.

Three specifications are considered for each of the outcome variables: (a) OLS with the initial set of controls (firm size, legal status indicators, firm age, female share, location and

³¹ Since firms either exited or survived, this study was unable to account for such unobserved firm-fixed effects over time.

sector indicators and year dummies); (b) OLS with the extended set of controls, which in addition to the above include average income and past performance; (c) fixed effect (FE) specification, where firm age and location are omitted.³² Throughout the specifications, the standard errors are clustered at the firm level.

The results are presented in table 4, focusing on the coefficients for the social security coverage (full results are provided in appendix table B2). Regarding revenue, table 4A makes it clear that the coefficient for the social security share is positive and highly significant throughout all the specifications. As expected, the magnitude is much smaller in the FE specification, since this specification accounts for unobserved firm-specific heterogeneity such as owner ability. The results of the FE specification suggests that firms which increased the social security coverage by 10 per cent experienced a revenue gain of between 1.3 and 1.5 per cent, and that this effect increased the longer the firm survived.

Table 4

(A) Revenue

Periods	(1) OLS	(2) OLS (extended)	(3) Fixed effect
1	0.522*** (0.016)	0.547*** (0.015)	0.125*** (0.009)
2	0.541*** (0.017)	0.547*** (0.016)	0.131*** (0.009)
3	0.545*** (0.017)	0.546*** (0.016)	0.136*** (0.009)
4	0.590*** (0.018)	0.545*** (0.017)	0.145*** (0.008)

Notes: Dependent variable: real net revenue per worker. Robust standard errors clustered at the firm level (in parenthesis). ***p<0.01, **p<0.05, *p<0.1. See appendix table B2 for more details.

(B) Revenue

Periods	(1) OLS	(2) OLS (extended)	(3) Fixed effect
1	1.124*** (0.041)	1.109*** (0.037)	0.035 (0.025)
2	1.245*** (0.043)	1.191*** (0.040)	-0.023 (0.026)
3	1.307*** (0.045)	1.226*** (0.043)	-0.006 (0.026)
4	1.293*** (0.047)	1.233*** (0.044)	0.065** (0.029)

Notes. Dependent variable: real gross profit per worker. Robust standard errors clustered at the firm level (in parenthesis). ***p<0.01, **p<0.05, *p<0.1. See appendix table B2 for more details.

Estimation results on control variables are largely as expected (see appendix table B2).

- Firm size is significantly negative in columns 2 and 3, which suggests diminishing marginal returns as firms grew larger (recall that revenue is measured per worker).
- In general, private firms had lower revenue than other firm types (with the exception of PCs), which was consistent with their lesser likelihood of survival, as indicated in table 3.
- The female share was negative in the OLS yet positive in the fixed effect specification, pointing to the importance of accounting for unobserved time-invariant firm specific factors.
- As recalled from appendix table B1, the female worker share was positively correlated with social security provision, and in table 3 the FE specification, a higher proportion of female workers was positively associated with revenue.
- The measure of average workforce quality (average income by location, sector and firm size) is positive and highly significant in all periods. In the FE specification, however, the magnitude falls, given that manager ability, motivation and other time-invariant factors are accounted for.
- Finally, past performance, as measured by revenue growth, is well determined and positive, as expected.³³

Generally, the findings indicate that paying social security contributions is beneficial in terms of firm revenue. However, this does not take account of the cost of expanding the social security coverage, so it is necessary to consider how social security provision relates to gross profits.

The specifications and control sets are identical to those for revenue, with the exception that lagged profit growth is included as a measure of past performance. Table 4B presents the results according to the same three specifications as in table 4A. Again, the coefficients for social security share are highly significant in the OLS regressions, but reveal a more mixed picture in the FE specifications, with profit demonstrating a positive coefficient only in the fourth period.³⁴ The FE specification results show that, in the worst case scenario, social security payments made no difference to profits, and, in the best case, profits might have increased by up to 0.7 per cent if firms increased their social security coverage (the number of workers receiving social security) by 10 per cent. Interestingly, this result covers the period from January to December 2016, when the social security contributions were increased, though this apparently did not affect profits negatively; indeed, quite the opposite.

Results for the control variables for gross profits are similar to those for revenue (see appendix, table B2). Firm size was significantly negative in terms of profit per worker, while lagged profit growth was highly positive. Moreover, in line with findings in the literature (section 2), limited liability, joint stock companies and foreign-owned firms displayed a positive profit outcome compared with private firms, while CPs were less profitable. As expected,

³² Since sector and legal status both show slight variations over time, these variables are kept in the fixed effect specifications.

³³ Location, sector and year dummies are as expected, yet for space reasons these results are not presented.

³⁴ Refer to appendix table B2 for the complete set of results (for firms that survived all four periods). Location, sector and year dummies are as expected, yet for space reasons these results are not presented.

the average income – the proxy for workforce quality – was highly positive. Similarly, the female share displayed negative coefficients in the OLS specifications, yet was generally not well determined in the FE regressions, indicating that gender differences along the profit dimension did not exist once unobserved firm-specific factors were accounted for.

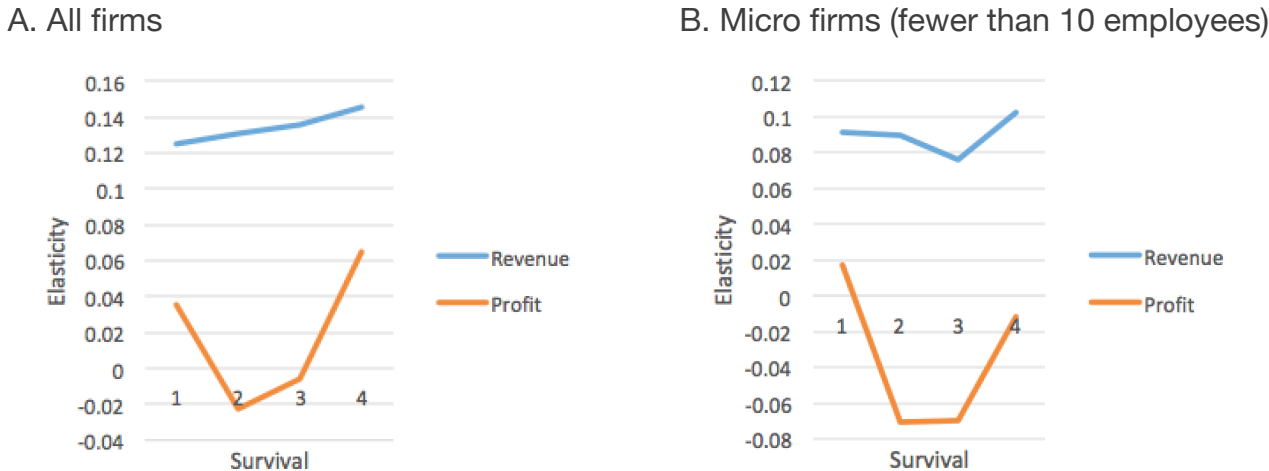
Overall, there was a clear positive link between social security provision and firm revenue, while a positive profit return was only observable after some time, which is unsurprising, given that firms would need to adjust to the additional expenses.

Since the positive performance relation was not attributable to firm-specific factors, enhanced workforce motivation presented a plausible alternative channel, in accordance with HRM bundles and social equity theory. In other words, firms that contributed to social security might have been able to attract more motivated employees and raise the motivation of existing workers. Although our average income measure to some degree captures the general quality of the workforce, we are unable to exclude the possibility that firms providing social security also experienced an upgrade in skill levels, which in turn could affect performance.³⁵ Moreover, “socially minded” firms may have benefited from cooperation with larger and more global companies who valued strong commitment to CSR and /or required adherence to labour regulations. Since the dataset did not allow for observing the composition of firms’ supplier/customer networks, this study was unable to investigate this further.

Moreover, table 4 shows that social security coefficients generally increased with survival (from period 1 to period 4). To make it easier to compare the elasticity of social security with respect to firm performance over time, figure 1A plots the social security coefficients for revenue and profit from columns (3) across all the samples.

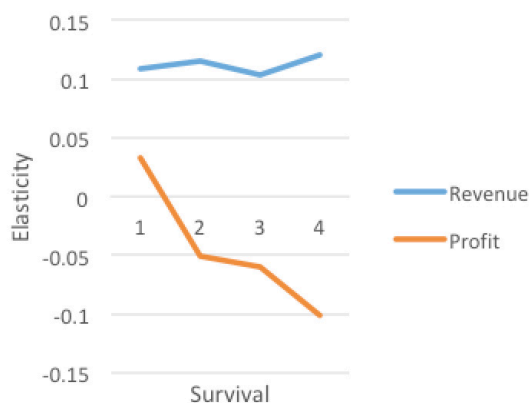
Figure 1

Social security returns (by firm size)

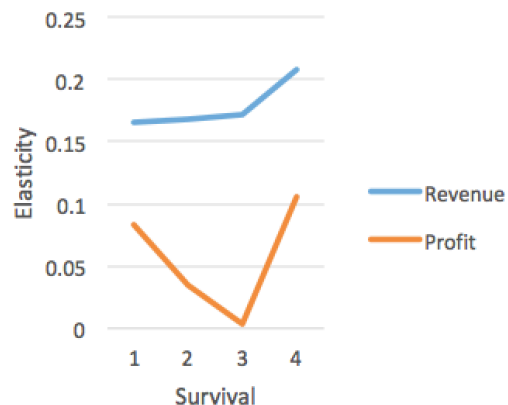


³⁵ For instance, the data do not allow for capturing in-house training, which could also affect firm performance.

C. Small firms (10–50 employees)



D. Medium firms (51–300 employees)



The figure shows how the social security effect (elasticity) generally increased, for both revenue and profit, with continuing firm survival. As expected, the profit effect was the lesser and the more volatile of the two.



Robustness checks

To assess the robustness of the results, the samples were split into different firm-size categories. Figures 1B, 1C and 1D show the results by micro, small and medium-sized groupings.

Micro-firms

(figure 1B), comprising about 20 per cent of the sample, initially experienced negative profits as a result of mandated social security payments, likely due to the more uncertain environment, even compared with small and medium-sized firms, in which they operated. As they adjusted their operations to the higher labour costs, profits, in line with revenue patterns, began to climb again.

Small-sized firms

(figure 1C) comprised about 37 per cent of the sample. The results show that social security elasticity with respect to profits fell gradually for such firms that survived all four periods (2012–16), while revenue rose slightly. This might be due to the time lag before firms adjusted to the higher social security costs from 2010 onwards.

Medium-sized firms

(figure 1D) represented 31 per cent of the sample. Here, the pattern conformed more closely with the overall results. This category of firm was more likely to be aware of the legal framework; employ a relatively larger share of workers on a more permanent basis; and have a longer business horizon. As such, it is unsurprising that they experienced a substantial initial drop in profits (though, unlike with micro-firms, profits were not negative), as a result of social security contributions.³⁶

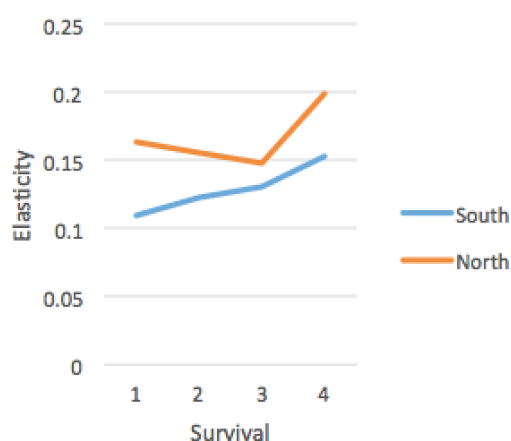
³⁶ Detailed summary statistics reveal that the social security share varied substantially by firm-size category, with around 38 per cent for micro-firms; 48 per cent for small firms; 60 per cent for medium-sized firms and 76 per cent for large firms.

One might expect the results to be more robust among southern-based firms, given that enterprises in Ho Chi Minh City (HCMC) are described as typically adopting modern human resource management at a greater rate (Zhu et al., 2008). Figure 2 shows the north-south split in sample firm location, and reveals a similar trend along the revenue dimension. Regarding profits, the results display more volatility for both locations. However, both southern and northern firms that survived more than two time periods saw rising profits as their operations adjusted to the higher labour costs.

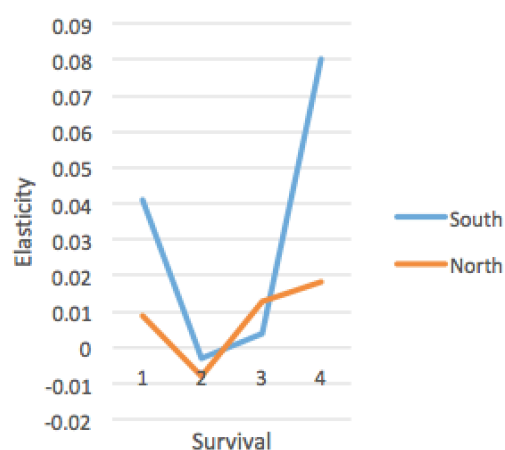
Figure 2

Social security returns (by location)

A. Revenue (per worker)



B. Profit (per worker)



Given that the vast majority of firms in our sample were located in rural areas – 80 per cent for firms that survived from 2012 to 2016, as indicated in table 2 – it is unsurprising that the results are generally more robust for rural firms, both in terms of revenue and profits.³⁷

³⁷ Results available upon request.

6 CONCLUSION

This study examines the relationship between social security provision and firm-level performance among Vietnamese SMEs. As part of the country's ongoing transition to a modern economy, the Vietnamese Government has shown strong commitment to social protection of the workforce. This is evidenced by the passage of a number of relevant regulations during the past decade or so together with the launch of related social programmes.

Compared with other countries in the region, Viet Nam's social protection programmes are fairly comprehensive, yet firm-level compliance with mandatory social and health insurance remained relatively low over the period of the study. This is related to a lack of regulatory awareness on the part of both firms and workers, as well as intentional evasion, particularly among SMEs operating in a highly dynamic environment, to cut costs.

Evidence from more industrialized countries suggests that there may be benefits to reap from increased social security coverage. In the context of emerging economies in general, however, the relation between firm performance and social security, including working conditions more broadly defined, is an area that remains largely unexplored.

Based on Vietnamese firm-level data covering all registered non-state manufacturing sector firms from 2012 to 2016, and taking account of the various methodological challenges presented by this kind of exercise, this study has applied a dynamic approach to gaining further insights into these issues. Controlling for relevant firm-level characteristics associated with either social security provision or firm performance (or both), this paper concludes that firms which increase their social protection coverage to 10 per cent of the workforce experience a net revenue per worker gain of between 1.2 and 1.5 per cent, compared to firms that do not provide social security. Moreover, the magnitude of this effect increases with firm survival time.

Since revenue does not take into account the cost implications of social security, this study also considered the (gross) profit return, and found this to be as great as 0.7 per cent, given a 10 per cent rise in social security coverage, this figure again rising with firm survival time.

Thus it seems that both workers and firms stand to gain from increased social protection provision. In line with human resource-related theory, the potential channels through which this occurs include a more motivated workforce expending more effective effort. Improved performance could have also been a result of access to larger customers who view adherence to labour-related regulation as imperative. The results hold when splitting the samples by location, and the findings are particularly robust for medium-sized firms, compared with smaller and micro-firms, which operate in a more uncertain environment, one characterized by more informal employment relations. In a sense, then, it is increased formalization of the workforce within the larger, more formal SMEs that leads to improved worker performance encouraged by enhanced working conditions.

In summary, the study results suggest the importance of exposing firms to the potential benefits of providing social security benefits, while acknowledging that such benefits may not be immediate.

Thus, in the case of SMEs, which often operate according to a short-term perspective, specific measures that seek to facilitate their participation in social insurance schemes, such as subsidized initial contributions, could potentially encourage the participation of firms and workers that are already eligible. Moreover, a more progressive system could serve to incentivize informal firms to become formally registered. This in turn would broaden coverage and help to ensure the sustainability of the social protection system. Finally, improved labour inspections systems would also help to ensure greater regulatory compliance.

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APPENDIX

Cleaning procedure

The following criteria were used to drop observations in arriving at the final samples used in the analysis:

- 1** Firms that have missing or incorrect location (province) information.
- 2** Duplication of firm IDs.
- 3** Firms that are owned/managed by the local government or are linked to the public sector.
- 4** Firms belonging to the primary or tertiary sector or that have operated in these sectors previously. I.e. we include only firms that during the whole time period are categorized as manufacturing or business service firms (including construction).
- 5** Firms where data are inconsistent from basic accounting principles, i.e. where figures for wages, net revenue of sales and services, total assets, fixed assets and investment and profit are recorded as less than 0/equal to 0/missing. Moreover, we only include firms with complete financial data along all the wage dimensions, net revenue of sales and services, total assets, fixed assets and investment and profit.
- 6** Firms where the figures for employment/employees receiving social security are recorded as less than 0/equal to 0/missing.
- 7** Firms that in all waves have missing information on establishment year. (For the 2006 and 2011 rounds, there was no information on establishment year, thus establishment year is imputed, basing this on information in other survey years).
- 8** Outliers are removed using the profit variable. The trimming is done by dividing the sample into sub-sets by location (64 provinces), industrial sectors (seven) and size categories (four) and eliminating observations that fall below the 1st percentile or above the 99th percentile.
- 9** Firms with large inconsistencies in size (total employment) between beginning-year (1 January) and (lag) end-year (31 December) are dropped, as are firms that have missing information on the (lag) number of workers receiving social security. Moreover, firms must report year of establishment and have complete information on (lag) revenue, employment, female share, average wage and revenue growth.

Table B**Determinants of social security coverage**

Firm size (logged)	0.032*** (0.001)	Paper	0.301*** (0.008)
CPs	0.103*** (0.019)	Publishing and printing	0.263*** (0.006)
Limited liability	0.044*** (0.007)	Refined petroleum, etc.	0.275*** (0.053)
Joint stock	0.103*** (0.008)	Chemical products	0.313*** (0.008)
Foreign	0.244*** (0.009)	Rubber	0.301*** (0.006)
Rural	0.093*** (0.006)	Non-metallic mineral products	0.239*** (0.010)
South	0.011** (0.005)	Basic metals	0.302*** (0.014)
Firm age	0.001 (0.001)	Fabricated metal products	0.221*** (0.005)
Female share	0.073*** (0.009)	Electronic machinery	0.312*** (0.007)
Average income (lagged)	0.189*** (0.008)	Motor vehicles	0.338*** (0.012)
Performance (lagged)	0.021*** (0.001)	Other transport equipment	0.289*** (0.017)
Food and beverages	0.255*** (0.008)	Furniture, jewellery, toys, etc.	0.181*** (0.007)
Textiles	0.283*** (0.009)	Electricity, gas and air-conditioning	0.308***
Apparel	0.233*** (0.008)	Water supply and sewage	(0.018)
Leather	0.268*** (0.011)		0.248*** (0.023)
Wood	0.179*** (0.012)		
Observations		83 769	
R-squared		0.364	

Notes. Dependent variable (social security coverage): share of workers receiving social security. OLS estimates. Robust standard errors clustered at the firm level (in parenthesis). Revenue and wage and are in real constant USD (base year 2005). For legal status the reference category is private enterprise and for sectors it is construction. Year and province dummies included. ***p<0.01, **p<0.05, *p<0.1.

Table B2**Social security returns****(a) Revenue**

	(1)	(2)	(3)
Social security	0.590*** (0.018)	0.545*** (0.017)	0.145*** (0.008)
Firm size (logged)	0.003 (0.005)	-0.062*** (0.005)	-0.352*** (0.006)
CPs	-0.274*** (0.028)	-0.128*** (0.026)	-0.054*** (0.014)
Limited liability	0.121*** (0.018)	0.087*** (0.017)	0.441*** (0.012)
Joint stock	0.104*** (0.015)	0.093*** (0.014)	0.228*** (0.009)
Foreign	0.251*** (0.019)	0.087*** (0.019)	0.199*** (0.008)
Firm age	0.059*** (0.011)	0.146*** (0.011)	
Female share	-0.967*** (0.035)	-0.768*** (0.033)	0.031* (0.017)
Average income		0.935*** (0.033)	0.198*** (0.020)
Performance lagged		0.536*** (0.003)	0.572*** (0.003)
Observations	85 020	85 020	85 020
R-squared	0.165	0.343	0.544
Number of id_unique			17 004

Notes. Dependent variable: real gross profit per worker. Ordinary least squares (OLSs) and fixed effect estimates. Robust standard errors clustered at the firm level (in parenthesis). Profit and income are in real million VND (base year 2012). For legal status, the reference category is private enterprise. Year, province and sector dummies included in all specifications. ***p<0.01, **p<0.05, *p<0.1. The results for the periods 1, 2 and 3 are similar and thus not reported.

(b) Profit

	(1)	(2)	(3)
Social security	1.293*** (0.047)	1.233*** (0.044)	0.065** (0.029)
Firm size (logged)	0.006 (0.013)	-0.082*** (0.012)	-0.386*** (0.016)
CPs	-0.389*** (0.064)	-0.302*** (0.055)	-0.058* (0.033)
Limited liability	-0.292*** (0.040)	-0.325*** (0.038)	0.178*** (0.033)
Joint stock	-0.086*** (0.032)	-0.163*** (0.028)	0.129*** (0.023)
Foreign	0.973*** (0.053)	0.826*** (0.050)	0.217*** (0.028)
Firm age	-0.039 (0.030)	0.020 (0.028)	
Female share	-0.856*** (0.089)	-0.640*** (0.083)	0.042 (0.058)
Average income		1.171*** (0.063)	0.263*** (0.055)
Performance lagged		0.525*** (0.006)	0.517*** (0.005)
Observations	22,828	22,828	22,828
R-squared	0.378	0.511	0.500
Number of id_unique			5,707

Notes. Dependent variable: real gross profit per worker. OLS and fixed effect estimates. Robust standard errors clustered at the firm level (in parenthesis). Profit and income are in real million VND (base year 2012). For legal status the reference category is private enterprise. Year, province and sector dummies included in all specifications. ***p<0.01, **p<0.05, *p<0.1. The results for the periods 1, 2 and 3 are similar and thus not reported.

