

**ERIA Discussion Paper Series****No. 419****Participation in Global Value Chains and Rent Sharing by Small Firms in Viet Nam**

Nobuaki YAMASHITA\*

*Swinburne University of Technology, Keio University, ANU*

Doan Thi Thanh HA\*

*Economic Research Institute for ASEAN and East Asia (ERIA)*

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**Abstract:** *It is well documented that firms that participate in global value chains (GVCs) are larger and more productive, maintaining higher profitability compared to those without such connections. This paper asks the novel question of whether higher profits being connected to GVCs are shared with employees in the form of better pay. We investigated this rent sharing, using a matched employer–employee dataset of Vietnamese small firms surveyed between 2013 and 2015. We found that positive profits would feed into individual wages after accounting for the firm and employee attributes, as well as firm and employee fixed effects, but this is only found for those small firms without any involvement with GVCs. Rent sharing, on the other hand, is completely absent in GVC firms. We take this as evidence that GVC firms provide both higher wages and insurance against demand fluctuations.*

**Keywords:** Global value chains (GVCs), rent sharing, profits, outsourcing, multinational enterprises, Viet Nam, microenterprises, small and medium enterprises (SMEs)

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\*Corresponding author. nyamashita@swin.edu.au

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\* doan.ha@eria.org

## 1. Introduction

Global value chains (GVCs) have been a key driver of globalisation over the past several decades (Taglioni and Winkler, 2016; World Bank, 2020; Antràs, 2020; Fernandes, Kee, and Winkler, 2021), especially in East Asia (Athukorala and Yamashita, 2006). With the international fragmentation of production, a country no longer is required to develop the full suites of production capacity to tap into the export markets. This has also given unequalled opportunities for microenterprises and small firms<sup>1</sup> to be a part of GVCs to benefit from globalisation. Being connected to the globalised market would facilitate productivity growth, technological spillovers through learning effects, and improved resource allocation, all of which contribute to broader industrial development in a developing country (Verhoogen, 2020). The benefits from globalisation also extend to female empowerment (Molina and Tanaka, 2021), upskilling and school enrolment (Oster and Steinberg, 2013; Heath and Mobarak, 2015), and an improvement in working conditions (Tanaka, 2020). Even if not available for direct global engagement in the means of exporting, GVCs are becoming inclusive, providing local linkages and similar benefits (Javorcik, 2004; Alfaro-Urena, Manelici, and Vasquez, 2021). It is thus argued that participating in GVCs expands the scope of economic prosperity for firms, industries, and countries (World Bank, 2020).

However, the lingering question is the extent to which the economic prosperity enjoyed by firms participating in GVCs has been shared with their workers, in particular, whether and to what extent higher profits increase wages through rent sharing.<sup>2</sup> This is a novel question that is to be answered in this paper.

Specifically, we empirically examine this rent sharing of GVC firms, using the matched employer–employee dataset covering microenterprises and small firms in Viet Nam. The wage–profit equation is used to determine individual wages after accounting for both firm and employee attributes. The key wage predictor includes the *firm-level* profitability, and its elasticity would tell us the degree of rent sharing

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<sup>1</sup> In the World Bank’s definition, microenterprises are firms with up to 10 employees, small enterprises up to 50 employees, and medium enterprises up to 300 employees. The average employment that we use (to be described in Section 2) is about 30. Hence, we call our sample ‘small firms’.

<sup>2</sup> The prospect of sharing profits gains with workers has been introduced as rent-sharing in labour economics (Oswald, 1996).

between profits and wages. One major empirical challenge is to establish a causal relation between profits and wages. This would be the case when using firm-level profitability in the profit-wage equation (Card et al., 2018). Our strategy relied on the timing assumption that the past firm-level profits would take time to be reflected on current individual wages if indeed the causal relation has been identified (Angrist and Pischke, 2009). We provide support for the timing assumption to establish a causal analysis.

The key finding is that rent sharing is largely absent for GVC firms, though they maintain a higher level of wages and profits. Rent sharing, conversely, was evident for firms without GVC connections (non-GVC firms). These firms would share a portion of their profit gains with employees in the form of better pay: the profit–wage elasticity is estimated to be around 0.04–0.05, which is closer to the lower bound of the elasticity reported in the literature using the employer–employee dataset (Card et al., 2018). Various robustness checks, including sample division by the legal status of the firm and the type of occupation as well as controlling a formal contract and the presence of labour union, still support rent sharing for non-GVC firms. The use of worker fixed effects in the panel data of employees also supports this finding.

Our finding of a lack of rent sharing for GVC firms creates a sharp contrast with the highlighted cases of large exporting firms sharing rents with their employees in the form of higher wages when the appropriate shocks for exporting were presented, such as exchange rate devaluations and trade liberalisation (Verhoogen, 2008; Bustos, 2011; Frías et al., 2021; Krishna, Poole, and Senses, 2014; Macis and Schivardi 2016; Verhoogen, 2020).

While we do not have the detailed data to pin down the positioning of firms in GVCs, our sample of small firms could be at the lower end of value chains, with thinner value-added margins to share with employees (Antràs, 2020).<sup>3</sup> More importantly, our findings point to the presence of wage insurance: From an employee standpoint, the absence of rent sharing means that wages are somehow shielded from unfavourable wide fluctuations in product demand, i.e. wage

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<sup>3</sup> This could happen because relatively capital-intensive production techniques and automation practices are shifted to their foreign production facilities, mobilising resources away from labour to capital.

insurance (Guiso, Pistaferri, and Schivardi, 2005; Juhn et al., 2018). This is an especially important feature in developing country contexts, where there are few practical mitigating strategies to insulate workers from idiosyncratic shocks to their wages.

Overall, our paper focuses on rent sharing for GVC firms, making it the first study to do so in the literature. Evidence of a lack of rent sharing would add to the policy analysis to understand gains from GVCs. On one hand, participating in GVCs would offer attractive wages and much-needed insurance for employees. On the other hand, a lack of rent sharing means that the wage benefits of GVCs have yet to be realised for small firms at the lower ‘tails’ in the creation of value chains. The latter suggests room for policy improvement to extend gains from globalisation to employees at small firms.

This paper makes two additional contributions to the literature. First, our data can capture a broader definition of GVC participation, i.e. not only firms exporting and importing (Antràs, 2020), but also those engaging with supplying and processing intermediate inputs for exporters and foreign affiliates of multinational enterprises (MNEs) operating locally. Normally, the identification of GVC connections would require detailed input–output linkages, and firm-to-firm and transaction data (Bems and Kikkawa, 2021; Alfaro-Urena, Manelici, and Vasquez, 2021). Even if available, the measurement tends to cover only large manufacturing firms which are typically surveyed in the census. Instead, we make use of surveys designed to acquire firms’ local engagement of processing and subcontracting with MNEs as well as exporting and importing.

Second, we provide further evidence on the impacts of globalisation on wages of small firms, which is sparse and mixed at best. For example, while the targeted experimental studies conducted by Atkin, Khandelwal, and Osman (2017) showed the productivity gains (measured by the quality dimension and speed) for small-scale rug exporters in Egypt, followed by increased household income for the owners, the causal effect of exporting on wages of employees was undetected for the case of small-scale garment-exporting firms in Myanmar (Tanaka, 2020). Focusing on the wage effects of GVCs, our paper would also add to this line of research.

The current study also contributes to the broader policy analyses of the issue surrounding GVCs and their impact. As developing countries are deeply involved with the stages of GVCs, small firms have started to take part in them. This has a significant implication for the policymakers who wish to maximise the economic benefits of GVCs because small firms play a significant role in economic development (Atkin et al., 2017). Viet Nam provides an excellent case study to investigate the issue: As a result of modernisation strategies unleashed by the Doi Moi in the mid-1980s, industrialisation in Viet Nam has been a great success, prompting it to become one of the emerging middle-income developing countries (McCaig and Pavcnik, 2018). In this process, the integration of the global market in the form of GVCs has been pivotal, making an ideal testing ground for this study (World Bank, 2020).

## **2. SME Data**

### **2.1. Overview**

The data used for this study have been extracted from the Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam, which were jointly conducted and administered by the Central Institute for Economic Management, the University of Copenhagen and the United Nations University, World Institute for Development Economics Research (WIDER) in the biennial interval, starting in 2005 and ending in 2015.<sup>4</sup> This study uses the portion of the survey conducted in 2011, 2013, and 2015.<sup>5</sup> Each wave of the survey covered about 2,500 SMEs in 10 provinces, which are spread across three regions of Viet Nam.<sup>6</sup> The surveyed enterprises include households, informal firms, private firms, co-operatives, or limited liability firms, which are represented in each province (Trifkovic, 2017).<sup>7</sup>

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<sup>4</sup> <https://www.econ.ku.dk/derg/links/vietnam/>; <https://www.wider.unu.edu/database/viet-nam-data>.

<sup>5</sup> The surveys are available for 2005, 2007, 2009, 2011, 2013, and 2015. Apart from the first survey, the employee modules are available from the 2007 survey. However, we decided to work on the 2011–15 surveys, which are based on more consistent survey format than the earlier surveys.

<sup>6</sup> North (Ha Noi, Ha Tay, Phu Tho, and Hai Phong) South (Ho Chi Minh, Long An, and Khanh Hoa) and Central (Nghe An, Quang Nam, and Lam Dong).

<sup>7</sup> Regarding the sampling design, a representative sample of registered household and non-household firms in manufacturing were drawn from the Establishment Census from 2002 and the

It is useful to highlight the relative strength of SME data compared to other microdata available in Viet Nam. First and foremost, information on GVC participation, especially the Vietnamese firms' linkages with foreign-invested enterprises (FIEs) or exporters operating in the local economy, is unique (to be detailed below). The Viet Nam Enterprise Survey (VES) includes information about direct exports and imports, but not other ways of involvement to GVCs. Additionally, the VES does not have the structure of employer–employee, only average wages available, with no information attached about the individual workers. On the other hand, the Viet Nam Household Living Standards Surveys used in McCaig and Pavcnik (2018) cover detailed information about employees' attributes, such as demographics, occupations, and educational level. However, similar to the VES, this household database does not contain several key details about GVC participation. Due to the nature of the household surveys, it only covers informal household business. The SME data also cover informal and household business, but, as will be shown in the data description, GVC firms are usually formal and limited liability enterprises. The SME data have been used in several other studies (e.g. Rand and Tarp, 2012; Sharma and Tarp, 2018), but none of them has explored firms' involvement with GVCs.

### ***Measurement***

One salient feature of the SME data is information about direct and indirect involvement with GVCs. We define direct involvement with GVCs if firms record any positive values of sales of exporting and importing raw materials (the survey questions are displayed in Appendix A). For indirect involvement of GVCs, it is defined if firms report any positive value of sales to FIEs and outsourcing and subcontracting with FIEs operating in the local economy (Trinh and Doan, 2018). A bundle of firms is then defined as *GVC firms* that satisfy the above requirements. The main analysis follows that definition. We also report the results based on the direct and indirect definitions of GVC participation. All other firms which are not categorised are labelled as *non-GVC firms*.

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Industrial Survey 2004–2006 of the General Statistics Office of Vietnam of Vietnam General Statistics Office (GSO) under a stratified sampling procedure.

Admittedly, this way of measuring involvement with GVCs is broad, encompassing not only exporters and importers but also firms supplying and processing intermediate inputs for FIEs. Without access to the detailed level of transaction and firm-to-firm information such as the one presented in Bems and Kikkawa (2021), our approach using the specific survey question about the involvement in GVCs comes in as second-best. However, we argue that this definition of GVC involvement is still an improvement compared to studies measuring GVCs in industries and regions, using international input–output tables (e.g., Shreshtha and Winkler, 2021).

Another important qualification is that the categorisation of the firm into GVC and non-GVC has been fixed throughout the estimation period, even though actual variables vary across survey years. For example, in some survey years, GVC firms report a positive share of exports in total sales, while no positive reporting is in other years. Regardless of time variation of reporting, as long as firms at least report positive values regarding GVC participation, a given firm is defined as a GVC firm. We justify this approach because the fixed categorisation of firms allows us to focus on estimating the relationship between time-varying profits and wages. In contrast, introducing GVC participation as time-variant unnecessarily adds another layer of methodological complications to deal with. The immediate one is the endogenous nature of GVC participation over time. With no satisfying solution to the endogenous nature of GVC participation at firm-level, we settle for fixing this categorisation. Instead, we assume that firm-level profitability reflects participation in GVCs and address the endogenous nature of this key variable in the wage-profit equation.

### ***Firm and employee data***

There are two main modules of the survey which are useful to our study. First, the enterprise survey contains information on firms' characteristics, including the sector affiliation, year of creation, the average number of employees, sales, capital investment, wage bills, exports and imports. This module is panel data with the unique identifier tagged to each firm.

The second component constitutes the employee survey, which is a subset of employees in about a quarter of randomly selected enterprises (around 400–500 firms) from the enterprise module.<sup>8</sup> In each employee module, information on between one and seven employees is attached, and the employee modules are based on the survey answers from the sampled individual employees, neither from the owners nor the managers. Unfortunately, the employee information cannot be constructed as a panel over all of the survey periods, but only for the adjacent surveys (details are provided in section 4). The employee module can be matched to the enterprise module through the firm identifier. We therefore include firm fixed effects in all regressions. The employee module provides variables such as (weekly or monthly) individual wages, annual gross earnings (including irregular payments such as overtime, shift work, and bonuses), employee demographic and socioeconomic characteristics such as gender, marital status, educational attainment, prior experience (in years), tenure in the current enterprise (in years), and the category of six different occupations (managers, professionals, service, office, sales, and production workers).

Several points on data are in order before proceeding. First, in the data cleaning process, we dropped all the instances where the manager has a dual role as the owner or the employee is a family member of the owner (i.e. children). This is because the wage information of the family member is not an accurate representation of ‘market wages’. The family of the household is usually engaged with the family members or relatives with the alternative format of the compensation rather than the wages. Second, the main wage data at an individual level is the monthly wage, which has been recorded at the time of the survey year (usually, in June). This is because most employees have been paid monthly because of their regular employee status.<sup>9</sup>

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<sup>8</sup> Hence, the double randomisation from the firm and employee.

<sup>9</sup> The SME data provide the working hours. Hence, in principle, it is possible to construct the hourly wages. However, there is little variation in the monthly working hours reported across individual workers. This makes little difference, as we use either monthly or hourly wage rates.



## 2.2. Descriptive statistics

Table 1 provides the sample characteristics. We start with the original enterprise module column 1. More than 2,500 enterprises were surveyed each wave, reaching over 2,600 firms in 2015.

Within these, only the sample of firms around 13%–14% has been retained, with information of employees in column 2. In the corresponding attached employee module, we have close to 900 employees on average (column 3).<sup>10</sup> Once we identified the matched sample, we extract information about GVC linkages based on the survey questions as discussed above. Unsurprisingly, the number of GVC firms in column 4 accounts for a smaller share (around 2%–3%) in the original sample. The total number of employees for GVC firms stood at 783 on average (column 5). The remaining sample has been designed as non-GVC firms with 875 firms in total (column 6) and the number of employees attached 1,909 (column 7). The number of employees for GVC and non-GVC firms comprises the sample in the regression analysis.

**Table 1: The Number of Firms and Employees in the Survey Years 2011, 2013, and 2015**

	Original data	Matched employer–employee		GVC		Non-GVC	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Survey year	# of firms	# of firms	# of employees	# of firms	# of employees	# of firms	# of employees
2011	2,512	390	897	66	213	323	684
2013	2,542	372	944	77	297	295	647
2015	2,647	338	851	81	273	257	578
Average	2,567	366	897	75	261	292	636
Total	7,701	1,100	2,692	224	783	875	1,909
Unique firms	3,504	643	NA	119	NA	524	NA
Share in original data		(3)/(1)		(4)/(1)		(6)/(1)	
%	100	18.35		3.40		14.95	

FIE = foreign-invested enterprise, GVC = global value chain.

Notes: Matched employer–employee are the sampled enterprises attached with the employee modules in each survey wave. GVC firms are defined if a firm reports any positive value either of the following items in any survey wave; sales of exporting and importing raw materials, sales to FIEs and outsourcing and subcontracting for FIEs. Non-GVC firms are all other enterprises.

Source: Survey of Small and Medium Enterprises of manufacturing industries in Viet Nam.

<sup>10</sup> This figure refers to before any data cleaning was implemented.

Table 2 focuses on the matched employer–employee sample, making a comparison between GVC and non-GVC firms. Consistent with other studies (Baldwin and Yan, 2014; Brancati et al., 2017), our data also confirm that GVC firms are larger, more profitable, and capital-intensive: The average number of regular employees for GVC firms is 50,<sup>11</sup> and that of non-GVC firms is 16. All three indicators of profitability for GVC firms in column 1, i.e. revenues, value added, and profits per worker, are almost double those for non-GVC firms in column 2. If we interpret value added per employee as an indicator of productivity, this means that GVC firms are about twice as productive as non-GVC firms. Moreover, most of these differences are statistically significant, as shown in the column with the p-value. Most importantly, a cross-group comparison of profits per worker indicates that GVC firms maintain higher profitability: VND106 million for GVC firms, while only VND52 million for non-GVC firms.

**Table 2: Comparison of Selected Average Firm Attributes between GVC and non-GVC for the Survey Year 2011, 2013, and 2015**

	<b>GVC</b>	<b>Non-GVC</b>	<b>Diff.</b>	<b>p-value</b>
	(1)	(2)	(1)–(2)	(1)=(2)
Profits per worker	106.6	52.3	54.3	0.00
Revenues per worker	785.6	457.8	327.7	0.28
Wage bills per worker	47.5	35.2	12.4	0.00
Value added per worker	156.2	88.4	67.8	0.00
Capital per worker	531.2	409.7	121.4	0.03
Number of workers	50.0	16.1	33.9	0.00

GDP = gross domestic product, GVC = global value chain.

Note: All accounting figures (total revenue, labour costs, value added, profits and capital) are expressed as a nominal value in millions of Viet Nam dong (VND), divide by the average number of workers. As a reference, GDP per capita (current US\$) of Viet Nam in 2015 from the World Bank Indicators was US\$2,085. Based on the average exchange rate for VND19,589 per US\$ for the year 2009–13, GDP per capita is equivalent to VND40 million. If we interpret this as a rough indicator of wage rate per worker, VND40 million is closer to the above figure for wage bills per worker.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

<sup>11</sup> This refers to the number of employees recorded in the enterprise module.

Table 3 compares employee attributes for GVC versus non-GVC firms. Employees in GVC firms on average tend to be more educated: 66% have a post-high school education, and that figure is only 45% for non-GVC firms. Perhaps, this reflects higher skill requirements in tasks for GVC firms. This is also reflected in differences in average individual wages. The difference is also statistically significant.

**Table 3: Comparison of Average Employee Attributes by GVC versus non-GVC Firms in the Survey Year 2011, 2013, and 2015**

	<b>GVC</b>	<b>non-GVC</b>	<b>Diff.</b>	<b>p-value</b>
	(1)	(2)	(1)–(2)	(1)=(2)
Male (=1)	0.47	0.64	–0.17	0.00
Education dummy (=1)	0.66	0.45	0.20	0.00
Age (year)	34.53	33.63	0.90	0.02
On-the-job training (=1)	0.31	0.28	0.03	0.11
Tenure with the current firm (year)	5.82	5.50	0.32	0.11
tenure at previous firms (year)	6.02	6.62	–0.60	0.04
Real wages (2015)	1,855.06	1,698.90	156.17	0.00
Nominal wage	3,933.57	3,512.89	420.68	0.00
Production workers (=1)	0.42	0.69	–0.27	0.00

GVC = global value chain.

Note: This is based on the employee module in the matched employer–employee data. Education =1 if an individual has above high school of education. Real and nominal wages are in VND1,000.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

### **3. Empirical Strategy**

Our empirical framework follows the studies on rent sharing by regressing individual workers’ wages on the workers as well as firm attributes (Blanchflower, Oswald, and Sanfey, 1996; Hildreth and Oswald, 1997). Rent sharing has traditionally found a theoretical ground in the bargaining framework in which rents are divided between the firm and its employees (Card et al., 2018). Subsequently, a wide range of theoretical justifications behind the empirical test has also been

proposed such as efficiency wages, fair-wage, monopsony, the contract model, risk diversification, and the turnover considerations (Frías et al., 2021), all of which depart from the perfectly competitive labour markets where the determinants of wages are independent of firm performance. We consider the following individual wage regression:

$$\ln(w)_{i,j,s} = \alpha(\pi/n_{j,t}) + \mathbf{Z}_{i,t}\mu + \mathbf{X}_{j,s}\phi + \delta_s + \delta_j + \varepsilon_{i,j,s} \quad (1)$$

where a subscript  $i$  for workers,  $j$  for firms, and  $s$  for the survey year, and  $t$  representing  $t-2$  and  $t-1$ . Both year and firm fixed effects ( $\delta_s, \delta_j$ ) are controlled in all regressions. The additional worker fixed effects will be introduced in the stayer sample in section 4.

In this formulation, a variable of interests is profits per worker,  $\pi/n$ . If its coefficient,  $\alpha$  is positive and statistically significant, it is indicative of rent-sharing, wage–profit elasticity) between employers and employees. Because of occasional negative values, the profitability variable is traditionally used in level. We also report the results based on log value added as an alternative indicator of firm performance.

It is also important to highlight that this firm-level variable has been constructed by an average of the proceeding 2 years to the specific survey ( $s$ ) wave in profits and the number of employees in  $s-2$  and  $s-1$  years. For instance, in the enterprise module in the 2015 surveys, firm-level profits in  $t$  correspond to the average values reported in 2013 ( $s-2$ ) and 2014 ( $s-1$ ). This is done to minimise the effects of the yearly business cycle on profits and the associated reporting errors, an important consideration for a study in the developing country context (de Mel et al., 2009). This difference in time when variables are taken also forms a basis for the identification strategy (to be discussed in detail below).

Firm attributes (size and capital–labour ratio) are included in  $\mathbf{X}$  and employee’ attributes (gender, work experience, and the level of education and on the job training) are stored in  $\mathbf{Z}$ . The inclusion of a conventional set of demographic and educational variables for workers is to control for the returns of human capital investments in the wage equation.

### *Identification issues*

Profits in the wage equation are by the accounting definition endogenous—higher wages squeeze profits (Arai, 2003). To establish a causal relation in Equation (1), we sought the following two approaches. First, we proceeded to estimate Equation (1) under the assumption that the shocks to the firm-level profits take time to be reflected on the current wages paid to employees as in the case of multiyear contracts. Hence, the past performance in profits is only reflected in the current wages, not the other way around. One sensible way of checking this timing assumption is to perform the following regression:

$$\pi/n_{j,t} = \beta \ln(w)_{i,j,s} + \delta_s + \delta_j + \varepsilon_{j,t} \quad (2)$$

That is, we regress the past profit performance measured at time  $t$  on the current individual wages measured at the survey year,  $s$ . Put another way, it is to check whether the future wage can be a predictor for past profitability. If the estimated coefficient of the future variable has little correlation with the past profit  $\pi/n_t$ , this validates our identifying assumption: past profitability is pre-determined in the current wage equation. We found no statistical evidence to suggest that past profits can be explained by current individual wages (Appendix Table A4).

The second approach is to find an effective instrument. However, finding a good instrument representing the exogenous shock that independently causes a change in firm-level profit is extremely difficult. Even the latest survey by Card et al. (2018) posited this as one of the remaining challenges in the rent-sharing studies, as more studies started to use the matched firm-worker datasets. In this limitation, we used the average profitability at 2-digit industry levels as the instruments for firm-level profits. This is the standard approach taken in the literature. The argument is that the industry-level profitability reflects the overall market rents, within which small firms are taken as price takers.

Guided by Angrist and Pischke (2009), we undertook the initial checks on the validity of the chosen instrument. We performed the reduced form and the first stage regression (the results presented in Appendix Table A5). The results suggest that the industry average profits are a weak instrumental variable for firm-level profits, judged by statistical significance: the chosen instrument fails a test on the rules of thumb for F-statistics from the first stage regression. There is also no correlation

established between the industry and firm-level profitability according to the reduced form. The latter is equivalent to the Wald test (Frías et al., 2021). Finding a lack in the statistical association between industry and firm profits is unexpected. However, we computed all the available firm-level variables before matching them to the employee data to increase the external validity of the instrument. This could be one contributing factor for such a low correlation between firm-level and industry-level profitability.

In searching for another valid instrument, we returned to the firm-level data. Information about the international management certification (such as ISO 9000)<sup>12</sup> can be a potential shock to firm-level profits (as demonstrated in Javorcik and Sawada, 2018). This variable also has variation across firms and years, and can stand after controlling firm and year fixed effects. However, the inspection of statistical validity as the instrument by the first stage and reduced regressions (Appendix Table A6) confirm that this is also a weak instrument, demonstrating little association to firm-level profits. One possible reason is that the independent impacts of the management quality (proxied by the certification) may have the delayed effects on profits rather than the short-run contemporaneous effects.

Overall, we decided not to pursue a strategy based on instruments. Instead, our main identification instead critically depends on the timing assumption – the time-lagged firm-level profit is predetermined in the current wage regression.

## 4. Results

Table 4 presents the main results, only displaying the main variable for wage–profit sensitivity for GVC and non-GVC firms (Appendix Table A1 shows the results of the fuller model with the coefficient estimates).<sup>13</sup> The benefit of the split sample is that we can incorporate firm fixed effects in a wage regression. For each

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<sup>12</sup> For example, according to a question in the 2011 SME Survey that asks the following: Does the firm have an internationally recognized quality certification (e.g. ISO9000, ISO14000)? Yes or No).

<sup>13</sup> We perform regression analysis for two separate sample of firms, i.e. GVC and non-GVC firms. One can also argue to use the combined sample and use a dummy variable to make a distinction between GVC and non-GVC firms. While this may result in achieving greater efficiency due to the larger sample size, the dummy approach is not practical in our case because the entry of firm fixed effects absorbs any time-invariant variables, including a dummy for GVC firms.

set of firms, a separate regression is performed with firm-level controls only in the first column and firm-level and worker-level covariates in the second column.

### ***Main results***

Starting with GVC firms in columns 1 and 2, the estimated profit–wage elasticity is essentially zero with little statistical significance.<sup>14</sup> This may indicate that workers have lower bargaining power in the wage negotiations, while being offered higher wages as compared to non GVC firms (as shown in Table 2). In other words, a sort of risk sharing is in place for GVC firms (Guiso, Pistaferri, and Schivardi, 2005; Juhn et al., 2018). This is an especially important feature in developing country contexts, where there are few practical mitigating strategies to insulate workers from idiosyncratic shocks to their wages for small firms. The results presented in Table A1 also indicate that a lack of rent sharing remains even if the sample of GVC firms are split, depending on direct (exporting and importing) and indirect (supplying to and subcontracting with FIEs) participation. This result does not change even with the inclusion of worker attributes, as shown later.

In stark contrast, rent sharing is evidence for non-GVC firms in Table 4: The estimated coefficient ( $\pi/n$ ) is positive and statistically significant without (column 3) and with (column 4) worker attributes. Given the mean of profit-per-employee, VND52 million (Table 2), the implied wage–profit elasticity is 0.04 ( $=0.0008*52$ ) in columns 3 and 0.05 ( $=0.001*52$ ) in column 4.<sup>15</sup> Accordingly, a doubling of firm profit (i.e. 100% increase) would boost individual real wage by 4%–5%. This wage–profit elasticity also points closer to a lower bound in the benchmark estimate in the literature: based on 15 studies using the employer–employee data reviewed in Card et al. (2018), the wage–profit elasticity ranges from 0.05 to the mean 0.08. Our elasticity points to the lower band possibly because of the smaller scale of firms covered in our dataset.

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<sup>14</sup> The results continue to hold even with regressions without firm fixed effects. Hence, the results are not driven by firm attributes.

<sup>15</sup> This elasticity is customarily computed in the literature on rent-sharing. It follows from Equation (1) with the elasticity of wage with respect to profits. See, for example, footnote 19 of Arai (2003).

### *Validation and heterogeneity*

We provide the initial check to validate the main findings. First, we use the alternative firm performance instead of profits per employee. This is important because of a known limitation of self-reporting profits in a developing country (de Mel et al., 2009).<sup>16</sup> The results using value added per worker or (log) value added as an alternative measure of quasi-rents in the wage equation are presented in Appendix Table A2. The main results are withheld: Rent sharing is only evident for non-GVC firms.<sup>17</sup>

**Table 4: Fixed Effects Regression Estimate of Wage-Profit Elasticity in GVC and non-GVC firms**

	(1)	(2)	(3)	(4)
Sample=	GVC		non-GVC	
Profits per worker	-.0001	-.0001	.0008***	.0010***
	(.000)	(.000)	(.000)	(.000)
Firm controls	Yes	Yes	Yes	Yes
Workers controls	No	Yes	No	Yes
Year and Firm FEs	Yes	Yes	Yes	Yes
N. of unique firms	119	116	524	470
Obs.	783	640	1,909	1,541

FE = fixed effect, GVC = global value chain.

Notes: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. The average *profits per worker* is VND105 million for GVC firms and VND52 million for non-GVC firms. \*\*\* denotes 1% significance. See Appendix Table for estimation of the full model.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

<sup>16</sup> While the caution when interpreting the results should be exercised, we argue that the misreporting of profits in our case may be kept at minimum. Most of small firms in our sample are formally registered firms, with household firms accounting for smaller share. This misreporting of profits can be attributed partly to a lack of bookkeeping practices. This accounting practice is more prevalent in formal registered microenterprises because of the obligations to the tax reporting.

<sup>17</sup> Total sales (or revenues) capture larger pool of available funds that is subject to rent-sharing as it is inclusive of all the rents and costs (Juhn et al., 2018). Card et al. (2018), on the other hand, prefer to use value added as a measure of economic performance.



Second, we focus on the different types of firm ownership by separating the sample into Household, Private and Limited liability in Table 5. Regressions in this table include both firm and employee attributes (columns 1–3 for GVC firms and columns 4–6 for non-GVC firms). In this sub-sample, the estimated coefficient  $n$  household firms in column 1 is positive and statistically significant. This goes to show that a channel of rent sharing works differently in the family firms, as opposed to other types of firms. We, however, make cautious interpretations for the following reasons. First, the sample size is quite small specific to household businesses engaged with GVCs (i.e. with only seven unique firms and 25 employees). Second, the estimated elasticity ( $\beta=0.28$ ) is larger than the one in the benchmark. The implied wage–profit elasticity amounts to 11.93. This is significantly larger than what was computed in the main results in Table 4, and is out of the bands in rent sharing elasticity reported in Card et al. (2018). Rent sharing remains, in contrast, evidence for limited liability for non-GVC firms (column 6 of Table 5).

**Table 5: Fixed Effects Regression Estimate of Wage–Profit Elasticity by the Type of Legal Ownership (Household, Private and Limited Liability) in GVC and non-GVC Firms**

	(1)	(2)	(3)	(4)	(5)	(6)
	Household	Private /solo	Limited liability	Household	Private /solo	Limited liability
	GVC			non-GVC		
Profit per worker	.2776**	–.0070	–.0000	.0020	–.0008	.0010***
	(.086)	(.008)	(.000)	(.002)	(.001)	(.000)
Firm and worker controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm and year FEs	Yes	Yes	Yes	Yes	Yes	Yes
N. of unique firms	7	15	79	248	65	125
Obs.	25	87	433	563	206	549

FE = fixed effect, GVC = global value chain.

Notes: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. \*\*\* denotes 1% significance; \*\* denotes 5% significance.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

Third, Table 6 reports the wage–profit elasticity of different occupations (Professional, Office, Sales, Services and Production) between GVC and non-GVC firms. We continue to find no evidence of rent sharing for GVC firms (Panel A). In comparison, profits are shared with employees especially with those production workers of non-GVC firms in column 5 of panel B. The implied elasticity indicates an order of 0.06, which is within the comparative estimates discussed above.

**Table 6: Fixed Effects Regression Estimate of Wage–Profit Elasticity by the Type of Occupation (Professional, Office, Sales, Services and Production Workers) in GVC and non-GVC Firms**

	(1)	(2)	(3)	(4)	(5)
	Professional	Office	Sales	Service	Production
<b>Panel A. GVC firms</b>					
Profit per worker	–.0001	–.0008**	–.0001	–.0021	.0000
	(.001)	(.000)	(.001)	(.008)	(.000)
Firm and worker controls	Yes	Yes	Yes	Yes	Yes
Firm and year FEs	Yes	Yes	Yes	Yes	Yes
N. of unique firms	85	77	57	36	106
Obs.	117	134	89	48	326
<b>Panel B. non-GVC firms</b>					
Profit per employee	–.0001	.0005	.0019	.0010	.0013***
	(.001)	(.004)	(.002)	(.005)	(.000)
Firm and worker controls	Yes	Yes	Yes	Yes	Yes
Firm and year FEs	Yes	Yes	Yes	Yes	Yes
N. of unique firms	127	106	103	55	500
Obs.	175	141	139	67	1,311

FE = fixed effect, GVC = global value chain.

Notes: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. \*\*\* denotes 1% significance; \*\* denotes 5% significance.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

### ***Wage setting***

What factors possibly account for this low elasticity of profits to wages for GVC firms? We consider the specifications that include the following additional controls to see whether the additions can explain high or low elasticity in rent sharing.

First, having a formal contractual agreement between employers and employees may limit the increased bargaining of employees in an increase of wages. The employee module of the SME survey does collect information on an existence of a contract on an individual employee basis.<sup>18</sup> In GVC firms, closer to 90% of employees have formal labour contracts with the specification of wages and working hours. For non-GVC firms, this share drops to 48%.<sup>19</sup> This difference in contract coverage may account for a divergence in wage–profit sensitivity; the extent of wage variations is significantly limited to a contracted agreement. Having the contract agreement may be a prerequisite for subcontracting with MNE affiliates or exporters. We thus introduce a binary indicator of the presence of the contractual agreement between employers and employees as well as the interaction with profit per employee in the main wage equation. Even allowing for the labour contract, the main results remain the same; profit-sharing is only observed for non-GVC firms. The results show that, even with the inclusion of a contract, the wage-profit sensitivity has been little altered.

Second, we consider the role of the trade union as a possible facilitator of increased wage bargains for employees. If functioning properly, a trade union can provide an effective mechanism to increase the bargaining power in workers' share in the profit gains. We introduce a binary indicator of the presence of trade union membership and its interaction with profitability. Again, even with this additional control, the main results change little. Having a union membership has little influence on the wage–profit relationship. However, in the complex system of the Vietnamese economy, a trade union, while extending its role, has limited capacity to represent employees (for the recent analysis, see Bach, Le, and Nguyen, 2021,

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<sup>18</sup> The exact question is ‘Do you have a formal (written down) labour contract?’ The binary response of ‘Yes’ or ‘No’ is recorded.

<sup>19</sup> The employee-year observation for GVC firms is 783, of which 699 responded ‘Yes’ to the wage contract question. For non-GVC firms, the employee-year observation stands at 1,909, of which 917 had formal contracts.

using the same SME dataset as ours). At the same time, it is an established finding that rent sharing occurs regardless of the institutional setting whether the wage bargaining is facilitated by trade unions or not (Card et al., 2018).

**Table 7: Fixed Effects Regression Estimate of Wage–Profit Elasticity with the Addition of a Binary Variable of Trade Union and Labour Contract in GVC and non-GVC Firms**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Adding a dummy of labour contract				Adding a dummy of trade union			
Sample=	GVC		non-GVC		GVC		non-GVC	
Profit per worker	–.0001	–.0006	.0010***	.0015**	–.0001	.0000	.0010***	.0010***
	(.000)	(.001)	(.000)	(.001)	(.000)	(.000)	(.000)	(.000)
labour contract (=1)	.0982	.0719	.0854	.1032**				
	(.081)	(.107)	(.044)	(.047)				
Profit per wrk*contract		.0006		–.0006				
		(.001)		(.001)				
Member of a Union (=1)					.0715	.1032	.0899	.1050
					(.069)	(.077)	(.088)	(.120)
Profit per wrk *Union						–.0003		–.0004
						(.000)		(.001)
Firm and worker controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm and year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N of unique firms	116	116	470	470	116	116	470	470
Obs.	640	640	1,541	1,541	640	640	1,541	1,541

FE = fixed effect, GVC = global value chain.

Notes: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. \*\*\* denotes 1% significance; \*\* denotes 5% significance.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

### *Stayer sample*

One remaining issue to be addressed is to check the validity of the key findings using the stayer sample. That is, instead of using all the available employees, we make use of the panel structure of employees. This is important because well-performing firms may decide to offer higher wages to attract more qualified skilled employees by changing the composition of employees within firms (Juhn et al., 2018). This naturally creates a spurious correlation between profits and wages. Focusing on a set of employees who remain at the same firm over the period may mitigate such concerns. We thus limit the sample of employees who appear in more than one survey, using a portion of the repeats.

Two issues warrant attention, using the stayer sample. First, we can only identify repeatedly surveyed employees if they appeared in adjacent surveys (e.g. identified either in the 2011–13 surveys or 2013–15).<sup>20</sup> Hence, we divide the period into two overlapping subperiods. Second, the stayer sample is inevitably smaller. Hence, it comes with all the caveats with a small sample, while admittedly it is a more appropriate sample to study the profit–wage relationship.

The results in Table 8 (Panel A, the period 2011–13 and Panel B, the period 2013–15) show that, even with the stayer sample with the inclusion of worker fixed effects, there is no evidence of rent sharing for GVC firms. For non-GVC firms, there was rent sharing with the stayer sample for the period 2011–13, but not 2013–15. We have little to say about this sensitivity of the different time periods, but it is a strong indication based on the large, estimated coefficients that the early period may be driving the benchmark results.

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<sup>20</sup> We followed a study by Trikovic (2017).

**Table 8: Fixed Effects Regression Estimate of Wage–Profit Elasticity Based on Stayer Sample for the Period 2011–13 and 2013–15 in GVC and non-GVC Firms**

<b>Panel A: 2011–13</b>	(1)	(2)	(3)	(4)
	GVC		non GVC	
Profits per worker	.0038	.0097	.0018***	.0022***
	(.006)	(.006)	(.000)	(.000)
Firm & worker controls	Yes	Yes	Yes	Yes
Worker & year FEs	Yes	Yes	Yes	Yes
N of unique firms	41	38	136	115
Obs.	163	120	316	236
<b>Panel B: 2013–15</b>				
Profits per worker	–.0001	–.0001	.0004	.0003
	(.000)	(.000)	(.000)	(.001)
Firm & worker controls	Yes	Yes	Yes	Yes
Worker & year FEs	Yes	Yes	Yes	Yes
N of unique firms	41	41	130	127
Obs.	210	186	392	346

FE = fixed effect, GVC = global value chain.

Notes: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. \*\*\* denotes 1% significance.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

## 5. Conclusion

Our study asked the novel question of whether GVC firms share a part of profits with employees, using the matched employer–employee data covering Vietnamese small firms. We make use of unique survey questionnaires vis-à-vis the involvement with GVCs—whether exporting, importing inputs, or supplying and subcontracting for FIEs, available at firm level. Our empirical strategy makes a comparative analysis of estimating wage–profit elasticity in GVC firms, compared with non-GVC firms (small firms without any involvement with GVCs). The dataset allows us to control for both firm and employee factors of individual wage determinants.

The main finding is that there is no clear evidence of rent sharing for GVC firms, while maintaining a higher level of wages and profits compared with non-GVC firms. This inference largely remains the same after catering for an array of firm and employee attributes, as well as firm and employee fixed effects. On the other hand, rent sharing remained the main feature in the wage equation of non-GVC firms. The profit–wage elasticity was estimated to be around 0.04 to 0.05, which is closer to the lower bound of the elasticity reported in the survey paper by Card et al. (2018). Rent sharing is pronounced with limited liability and for production workers of non-GVC firms. This result remained remarkably resilient to several validation checks, including the use of a stayer sample with the inclusion of employee fixed effects.

Our interpretation of the main results is that firms engaged with GVCs are more likely to offer both higher remuneration and wage insurance to insulate employees from idiosyncratic demand shocks. In contrast, rent sharing means that employees are more susceptible to such shocks and we found the likely case for non-GVC firms. Rent sharing could be a mechanism of sharing the risks between employers and employees for small firms. Wage insurance is a desirable property, especially in a developing country context where employees are left with few mitigating strategies to hedge themselves from idiosyncratic shocks. To further benefit employees, the policy instruments may be designed and installed to further distribute more from gains in rents of GVC firms towards employees. The obvious candidate as a facilitator to increase the bargaining power of employees is to establish a mediation mechanism such as a trade union. However, in the complex system of the Vietnamese economy, a trade union was found to have limited capacity to represent employees, as demonstrated in Bach, Le, and Nguyen (2021). In this light, our finding with a lack of rent sharing indicates instead a structural impediment of passing profit gains to employees for firms engaged in GVCs. Benefiting employees further will strengthen the ground for GVCs further luring MNEs setting up the production sites and more firms getting involved with GVCs.

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## Appendix A. Survey Questions

Survey questions used to define GVCs connections is as follows for example from the 2013 Enterprise Survey:

- I. Sales structure (in 2012) of the most important products (in terms of value). Calculate as percentages.
  - A) Individual people/households (non-tourists)
  - B) Tourists
  - C) Non-commercial government authorities
  - D) Domestic, non-state enterprises
  - E) State enterprises
  - F) Foreign-invested companies**
  - G) Direct exports**
  
- II. From whom did the enterprise procure its raw materials and other inputs in 2012. Given percentage distribution in terms of value.
  - A) From households
  - B) Other non-state enterprises
  - C) State enterprises
  - D) Other state agencies
  - E) Imported (directly)**
  - F) Other
  
- III. Outsourcing
  - A) Did the firm outsource production in 2012? Yes or No
  - B) If yes, how many outsourcing subcontracts in 2012?
  - C) What was the total costs of outsourcing in 2012? (million VND)
  - D) What percentage of your outsourcing contract value was for exports?**
  - E) The main reason for outsourcing parts of the production

IV. Firm as a subcontractor:

- A) Did the enterprise itself produce as a subcontractor in 2012? Yes or No
- B) If yes, how many subcontracts in 2012?
- C) What was the total revenue from these subcontracts in 2012? (million VND)
- D) What percentage came from subcontracts with foreign-invested enterprises?**

Source: <https://www.wider.unu.edu/database/viet-nam-data>.

**Table A1: Fixed Effects Regression Estimate of Wage–Profit Elasticity in GVC and non-GVC Firms (showing other control variables)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample=	GVC		GVC (direct)		GVC (indirect)		non-GVC	
Profits per worker	–.0001	–.0001	–.0004	–.0002	–.0002	–.0002	.0008***	.0010***
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
log size	.0246	.0625	–.0450	.0125	.0027	.0684	.1212**	.0854
	(.062)	(.052)	(.081)	(.069)	(.079)	(.058)	(.050)	(.061)
K-L ratio	.0001	.0001	.0001	.0001	.0001	.0002**	.0001	–.0000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Male (=1)		.0321		.0137		.0301		.0102
		(.033)		(.042)		(.037)		(.035)
Age of worker		.0070***		.0056		.0070**		.0021
		(.002)		(.003)		(.003)		(.002)
Education		.2569***		.2453***		.2786***		.0921***
		(.040)		(.044)		(.043)		(.030)
Job training		.0320		.0221		.0910		.0462
		(.050)		(.057)		(.052)		(.052)
Tenure (current)		–.0044		–.0030		–.0052		.0095**
		(.006)		(.010)		(.007)		(.004)
Tenure (prior)		.0056		.0073		.0068		–.0018
		(.003)		(.005)		(.004)		(.005)
Year & Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N of firms	119	116	76	74	98	96	524	470
Obs.	783	640	521	436	661	544	1909	1541

FE = fixed effect, FIE = foreign-invested enterprises, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. The average *profit per employee* is VND105 million for GVC firms and VND52 million for non-GVC firms. All columns include a full set of the year time and firm fixed effects. \*\*\* denotes 1% significance; \*\* denotes 5% significance. We define direct involvement with GVCs if firms record any positive values of sales of exporting and importing raw materials. For indirect involvement of GVCs, it is code 1 if firms report any positive value of sales to FIEs and outsourcing and subcontracting with FIEs.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

**Table A2: Fixed Effects Regression Estimate of Wage–Profit Elasticity in GVC and non-GVC firms, with the Value Added per Worker as an Alternative Measure of Quasi-Rent and Other Control Variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample=	GVC		GVC (direct)		GVC (indirect)		non GVC	
Value added per worker	–.0001	–.0000	–.0003	–.0002	–.0002	–.0002	.0012***	.0014***
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.001)
log size	.0257	.0632	–.0472	.0109	.0023	.0679	.1258**	.0902
	(.062)	(.052)	(.082)	(.070)	(.080)	(.058)	(.050)	(.062)
K-L ratio	.0001	.0001	.0001	.0001	.0001	.0002**	.0000	–.0000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Male (=1)		.0322		.0136		.0303		.0095
		(.033)		(.042)		(.037)		(.035)
Age of worker		.0070***		.0056		.0070**		.0022
		(.002)		(.003)		(.003)		(.002)
Education		.2572***		.2455***		.2790***		.0929***
		(.040)		(.044)		(.043)		(.030)
Job training		.0317		.0214		.0905		.0424
		(.050)		(.057)		(.052)		(.051)
Tenure (current)		–.0044		–.0030		–.0052		.0096***
		(.006)		(.010)		(.007)		(.004)
Tenure (prior)		.0056		.0074		.0067		–.0021
		(.003)		(.005)		(.004)		(.005)
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	.4	.6	.4	.5	.4	.6	.6	.6
N of firms	119	116	76	74	98	96	524	470
Obs.	783	640	521	436	661	544	1,909	1,541

FE = fixed effect, FIE = foreign-invested enterprises, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. All columns include a full set of the year time and firm fixed effects. \*\*\* denotes 1% significance; \*\* denotes 5% significance. We define direct involvement with GVCs if firms record any positive values of sales of exporting and importing raw materials. For indirect involvement of GVCs, it is code 1 if firms report any positive value of sales to FIEs and outsourcing and subcontracting with FIEs.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

**Table A3: Fixed Effects Regression Estimate of Wage–Profit Elasticity in GVC and non-GVC firms, with the Value Added as an Alternative Measure of Quasi-Rent and Other Control Variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample=	GVC1		GVC (direct)		GVC (indirect)		non GVC	
log value-added	.0293	.0310	–.0047	.0223	.0041	.0210	.1463***	.1746***
	(.050)	(.061)	(.053)	(.070)	(.052)	(.064)	(.043)	(.061)
log size	.0077	.0481	–.0309	.0066	.0056	.0643	–.0143	–.0754
	(.070)	(.062)	(.099)	(.085)	(.087)	(.070)	(.057)	(.071)
K-L ratio	.0001	.0001	.0001	.0001	.0001	.0001**	–.0000	–.0001
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Male (=1)		.0330		.0135		.0321		.0053
		(.032)		(.042)		(.037)		(.035)
Age of worker		.0068***		.0052		.0069**		.0021
		(.002)		(.003)		(.003)		(.002)
Education		.2599***		.2510***		.2824***		.0950***
		(.040)		(.044)		(.044)		(.030)
Job training		.0306		.0183		.0862		.0396
		(.050)		(.059)		(.052)		(.051)
Tenure (current)		–.0045		–.0033		–.0056		.0104***
		(.006)		(.010)		(.007)		(.004)
Tenure (prior)		.0054		.0078		.0062		–.0023
		(.003)		(.005)		(.004)		(.005)
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	.4	.6	.4	.5	.4	.6	.6	.6
N of firms	119	116	76	74	98	96	524	470
Obs.	783	640	521	436	661	544	1,909	1,541

FE = fixed effect, FIE = foreign-invested enterprises, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. All columns include a full set of the year time and firm fixed effects. \*\*\* denotes 1% significance; \*\* denotes 5% significance. We define direct involvement with GVCs if firms record any positive values of sales of exporting and importing raw materials. For indirect involvement of GVCs, it is code 1 if firms report any positive value of sales to FIEs and outsourcing and subcontracting with FIEs.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.



**Table A4: Validity Check on the Timing Assumption**

	(1)	(2)
	GVC	non-GVC
Dependent var.=	Profit per worker <sub>t-1</sub>	
log wages <sub>t</sub>	-.663	3.441
	(19.063)	(2.412)
Year FEs	Yes	Yes
N of firms	119	524
Obs.	783	1,909

FE = fixed effect, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. All columns include firm and employee variables, a full set of year time fixed effects.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

**Table A5: Reduced Form and First Stage Regressions of Industry Profit as an Instrument Variable**

	(1)	(2)	(3)	(4)
	Reduced-form		First-stage	
Sample=	GVC	non-GVC	GVC	non-GVC
Dep. Var.=	log individual wages		Profits per worker	
Mean industry profits per worker	.0020	-.0000	.7968	.3258
	(.002)	(.001)	(1.166)	(.238)
Firm and worker controls	Yes	Yes	Yes	Yes
Year and firm FEs	Yes	Yes	Yes	Yes
F-statistics	8.27	2.82	2.49	1.89
N of firms	116	470	116	470
Obs.	640	1,541	640	1,541

FE = fixed effect, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

**Table A6: Reduced and First Stage Regression Using an Indicator Variable of ‘Internationally Recognised Quality Certificate’ as an Instrument Variable**

	(1)	(2)	(3)	(4)
	Reduced-form		First-stage	
Sample=	GVC	non-GVC	GVC	non-GVC
Dep. Var.=	log individual wages		Profits per worker	
internationally recognized quality certificate (=1)	-.0544	-.0117	28.6425	4.9830
	(.072)	(.078)	(34.833)	(12.944)
Firm and worker controls	Yes	Yes	Yes	Yes
Year and firm FEs	Yes	Yes	Yes	Yes
F-statistics	8.22	2.72	2.58	1.66
N of firms	116	470	116	470
Obs.	640	1541	640	1541

FE = fixed effect, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

**Table A7: Fixed Effects Regression Estimate of Wage–Profit Elasticity with the Addition of a Binary Variable of Trade Union and Labour Contract in GVC and non-GVC firms (with other control variables)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	GVC		Non-GVC		GVC		Non-GVC	
	Adding labour contract				Adding trade union			
Profits per worker	-.0001	-.0006	.0010***	.0015**	-.0001	.0000	.0010***	.0010***
	(.000)	(.001)	(.000)	(.001)	(.000)	(.000)	(.000)	(.000)
Labour contract (=1)	.0982	.0719	.0854	.1032**				
	(.081)	(.107)	(.044)	(.047)				
Member of a Union (=1)					.0715	.1032	.0899	.1050
					(.069)	(.077)	(.088)	(.120)

Profit*contract		.0006		-.0006				
		(.001)		(.001)				
Profit*Union						-.0003		-.0004
						(.000)		(.001)
log size	.0643	.0629	.0766	.0782	.0334	.0251	.0783	.0786
	(.052)	(.052)	(.061)	(.061)	(.055)	(.059)	(.062)	(.062)
K-L ratio	.0001	.0001	.0000	.0000	.0001	.0001	.0000	.0000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Male (=1)	.0326	.0335	.0107	.0106	.0331	.0355	.0105	.0111
	(.033)	(.033)	(.035)	(.035)	(.033)	(.032)	(.036)	(.036)
Age of worker	.0070***	.0070***	.0020	.0021	.0069***	.0069***	.0021	.0021
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
Education	.2563***	.2561***	.0899***	.0900***	.2576***	.2579***	.0949***	.0947***
	(.039)	(.039)	(.030)	(.030)	(.040)	(.039)	(.030)	(.030)
Job training	.0281	.0282	.0469	.0452	.0300	.0309	.0488	.0475
	(.050)	(.050)	(.052)	(.052)	(.049)	(.048)	(.052)	(.052)
Tenure (current)	-.0047	-.0047	.0095**	.0094**	-.0050	-.0048	.0094**	.0095**
	(.006)	(.006)	(.004)	(.004)	(.006)	(.006)	(.004)	(.004)
Tenure (prior)	.0057	.0056	-.0015	-.0016	.0060	.0053	-.0017	-.0017
	(.003)	(.003)	(.005)	(.005)	(.003)	(.003)	(.005)	(.005)
Year and firm FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N unique firm	116	116	470	470	116	116	470	470
Obs.	640	640	1541	1541	640	640	1541	1541

FE = fixed effect, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. \*\*\* denotes 1% significance; \*\* denotes 5% significance.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

**Table A8: Fixed Effects Regression Estimate of Wage–Profit Elasticity Based  
on Stayer Sample in GVC and non-GVC firms for the Period 2011–13  
(with other control variables)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample=	GVC		GVC (direct)		GVC (indirect)		non-GVC	
Profits per worker	.0038	.0097	–.0006	.0059	.0029	.0098	.0018***	.0022***
	(.006)	(.006)	(.005)	(.003)	(.006)	(.006)	(.000)	(.000)
log size	–.3300	–.4417***	–.3670**	–.4927***	–.3645	–.4410***	.3346**	.3082
	(.209)	(.092)	(.167)	(.059)	(.196)	(.091)	(.136)	(.179)
K-L ratio	–.0002	–.0005	–.0007	–.0007**	–.0003	–.0005	.0001	.0001
	(.000)	(.001)	(.000)	(.000)	(.000)	(.001)	(.000)	(.000)
Male (=1)		–.0878		.3454**		–.0884		–.0351
		(.108)		(.136)		(.109)		(.089)
Age of worker		.0142***		–.0033		.0141***		.0090
		(.004)		(.010)		(.004)		(.008)
Education		–.1131		–.0944		–.1216		.1549
		(.123)		(.114)		(.132)		(.095)
Job training		.1404		.2041***		.1385		–.0763
		(.082)		(.065)		(.102)		(.082)
Tenure (current)		–.0466***		–.0268		–.0481**		–.0066
		(.012)		(.017)		(.018)		(.012)
Tenure (prior)		.0027		–.0138		.0029		.0050
		(.013)		(.012)		(.013)		(.011)
Worker and year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	.2	.8	.3	.9	.2	.8	.1	.2
N of firms	41	38	26	25	35	33	136	115
Obs.	163	120	106	79	149	111	316	236

FE = fixed effect, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. \*\*\* denotes 1% significance; \*\* denotes 5% significance.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

**Table A.8: Fixed Effects Regression Estimate of Wage–Profit Elasticity  
Based on Stayer Sample in GVC and non-GVC Firms for the Period 2013–  
15 (with other control variables)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample=	GVC		GVC (direct)		GVC (indirect)		Non-GVC	
Profits per worker	–.0001	–.0001	–.0002	–.0002	–.0001	–.0002	.0004	.0003
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.001)
log size	.2371	.2902**	.2664	.3025	.2780	.3167	.1320	.2050**
	(.124)	(.117)	(.146)	(.173)	(.178)	(.168)	(.089)	(.098)
K-L ratio	.0004	.0002	.0002	.0002	.0006	.0004	.0004	.0008***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.000)	(.000)
Male (=1)		.0801**		.0373		.0437		–.0212
		(.039)		(.104)		(.043)		(.143)
Age of worker		.0213***		.0191**		.0243***		.0138
		(.004)		(.008)		(.005)		(.008)
Education		.4258***		.3739***		.4077***		–.0650
		(.068)		(.087)		(.066)		(.104)
Job training		–.0729		–.0054		–.0908		–.0542
		(.057)		(.147)		(.067)		(.071)
Tenure (current)		–.0355		–.0387		–.0474		–.0043
		(.030)		(.039)		(.032)		(.008)
Tenure (prior)		.0051		.0048		.0034		–.0050
		(.004)		(.006)		(.004)		(.008)
Year and worker FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	.1	.4	.1	.3	.1	.4	.2	.2
N of firms	41	41	25	25	36	36	130	127
Obs.	210	186	137	122	189	166	392	346

FE = fixed effect, GVC = global value chain.

Note: All the models are estimated by ordinary least squares with standard errors clustered by firms in parentheses. \*\*\* denotes 1% significance; \*\* denotes 5% significance.

Source: Survey of Small and Medium Enterprises (SME) of manufacturing industries in Viet Nam.

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