



Effects of export and capital intensity on labor productivity of small and medium-sized enterprises in Vietnam

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Abstract

This study examines the moderating role of ownership in the impact of exports and capital intensity on the labor productivity of small and medium-sized enterprises in Vietnam, applying the Learning By Exporting theory and Neoclassical Growth theory. The study employs data extracted from the SME survey dataset provided by the General Statistics Office of Vietnam and a linear regression model estimated using the ordinary least squares method to test the hypotheses. The findings show that the positive impact of exports and capital intensity on labor productivity of enterprises with family ownership is smaller than that of enterprises with other ownership forms.

Keywords: Labor productivity, export, capital intensity, ownership form.

JEL classification: D24, G32.

1. Introduction

In the context of increasingly deep international integration, labor productivity is one of the critical factors contributing to enhancing the competitiveness of each enterprise in particular and each country in general. Despite significant improvements and steady increases over the years, Vietnam's labor productivity remains low compared to other countries in the region. The labor productivity gap between Vietnam and other countries in the region continues to grow. Therefore, research documents prominently discuss the increasing social labor productivity in general and the labor productivity of enterprises in the economy in particular. Based on the Learning By Exporting (LBE) theory and the Neoclassical Growth theory, many domestic and foreign scholars have studied the role of export and capital intensity on labor productivity. Most studies on capital intensity stop at the macro level.

Furthermore, it is uncertain whether there is a learning-through-export effect in promoting enterprise productivity. Therefore, this study aims to explore this gap by using micro-enterprise-level data in Vietnam. The findings provide empirical evidence on the impact of exports and capital intensity on enterprise labor productivity.

2. Literature review

Many studies have applied Neoclassical Growth theory to examine the impact of capital intensity on enterprise productivity. Lannelongue et al. (2017) studied the relationship between environmental management, capital intensity, and labor productivity. Furthermore, the study also examined the role of capital intensity in moderating the relationship between environmental protection and productivity improvement. The findings contribute to the debate over the impact of environmental management on economic performance in general and labor productivity in particular. They found a negative relationship between environmental management and labor productivity, which is in line with previous studies (Jaffe et al., 1995).

Novotná et al. (2020) explored the relationship between capital intensity and labor productivity in waste companies in the Visegrad countries. They concluded that there are differences in the relationship between capital intensity and productivity across countries. In the Czech Republic, capital intensity positively impacts productivity and profitability. The results are similar for Hungary and Slovakia; capital intensity leads to improved performance

(up to a threshold of 40 percent) for Hungary, and both countries have reduced profitability. In Poland, the results show that as capital intensity increases, enterprises' productivity and profitability decrease.

In Vietnam, Võ et al. (2017) studied the impact of human resource quality on total factor productivity (TFP) using the World Bank's 2009 enterprise survey data and applying the Solow (1957) economic growth model. The article used the ordinary least squares (OLS) regression model to test the idea that the quality of capital and labor positively correlates with the total productivity of Vietnamese businesses. Even when accounting for other business characteristics, the hypothesis remains fully supported. The results imply that to increase output, enterprises should invest in improving the quality of their resources, specifically capital productivity, labor productivity, retained earnings ratio, and labor skills. From an economic perspective, policymakers should focus on encouraging investment and improving the quality of national resources.

Similarly, Phan and Trần (2019) used a dataset of 63 provinces and municipalities in Vietnam from 2000 to 2017 with 1.034 observations based on the Neoclassical Growth theory. They used the fixed effects model and generalized least squares to study economic growth as the dependent variable, as well as investment capital and the labor force as the independent variables. The results show that public sector investment funded by the state budget, investment capital from the domestic private sector, investment capital from the foreign direct investment sector, and the annual labor force positively impacted Vietnam's economic growth from 2000 to 2017. However, the research did not identify a correlation between public sector investment funded by loans and economic growth in Vietnam. The authors have proposed several solutions to enhance public investment through the state budget based on the results. These solutions are based on the projects' quality, ensuring speedy completion and sustainable development. This approach strives to avoid scenarios where investments disperse and capital arrears arise. In addition, the research underscores the importance of increasing foreign investment to foster broad-based economic and societal benefits in Vietnam.

In summary, while several studies have examined the impact of capital use on company productivity, there remains a notable lack of comprehensive analyses that simultaneously consider the impact of exports and the level of capital use on labor productivity. This gap raises the question of whether or not the learning-through-export effect influences enterprise

labor productivity improvement. When considering the level of capital use through the lens of Neoclassical Growth theory, most domestic documents stop at the macro level, leaving an absence of evidence demonstrating the impact of business capital use on the performance and productivity of enterprises. To fill the research gap, this study focuses on analyzing the role of exports and the level of capital use on labor productivity at the enterprise level. To clarify the correlation between these variables, the study examines the impact of exports and capital intensity on the labor productivity of small and medium-sized enterprises (SMEs) in Vietnam, a transition economy, by applying LBE theory and Neoclassical Growth theory.

3. Research methodology

3.1. Theoretical background and research hypotheses

To analyze the impact of exporting on SMEs' labor productivity, this study uses the LBE theory as a basis for developing arguments. The LBE theory argues that exporting is the source of increasing enterprise productivity through the process of learning from exporting. When participating in export activities, enterprises absorb knowledge from their partners. This knowledge helps enterprises improve their production capacity (Benard and Jensen, 1999). This theory also states that when enterprises participate in international markets, they gain superior knowledge through the need to innovate for foreign customers and apply new production techniques with higher capacity to increase the company's productivity and innovation performance (Lu and Beamish, 2006). Exporting affects productivity in two ways: (1) Knowledge from international buyers or competitors helps improve enterprises' productivity. (2) Consumers or competitors can contribute to knowledge transfer by requesting techniques, technology, and knowledge from enterprises. However, in this regard, family-owned enterprises face two limitations. First, family-owned SMEs have limited access to markets and partners compared to other forms of ownership (joint stock companies or private enterprises). Second, family-owned SMEs are mostly capital-limited, focusing more on familial and social relationships than investing in techniques, technology, and employee training. Given these limitations, the study proposes the following hypothesis:

Hypothesis 1: SME exports have a positive impact on SME labor productivity.

The second objective is to investigate the impact of capital use on SMEs' labor productivity. This study uses Neoclassical Growth Theory as the analytical foundation to explore this relationship. The Solow (1956) growth model describes the increase in

economic output achieved through capital accumulation. The capital increase promotes economic growth. In this model, the economy is assumed to always be at the level of full employment, that is, at full employment or when the entire labor force is employed. The Solow-Swan model gave rise to the first major wave of systematic growth analysis, replacing the post-Keynesian Harrod-Domar model. The neoclassical aggregate production function, usually in the form of the Cobb-Douglas function, is its essence.

$$Q = A.K^\alpha L^\beta \text{ with } \alpha > 0 \text{ v\`a } \beta > 0 \quad (1)$$

Where A is a parameter greater than 0, reflecting the productivity of existing technology, and α and β are parameters indicating the relative importance of labor and capital in the production process. This production function is called a homogeneous production function of degree $(\alpha + \beta)$, which shows that if the input factors increase “t” times, the output will increase $t^{\alpha+\beta}$ times.

The coefficient of output elasticity with respect to capital, α , is determined as follows:

From the equation: $Q = A.K^\alpha L^\beta$ with $0 < (\alpha; \beta) < 1$

$$(\partial Q / \partial K) \times (K / Q)$$

$$\text{But } \partial Q / \partial K = Q'_{(K)} = A.K^{\alpha-1} L^\beta$$

$$\Rightarrow (\partial Q / \partial K) \times (K / Q) = \frac{\alpha A^{\alpha-1} L^\beta}{1} \times \frac{K}{A K^\alpha L^\beta}$$

The equation shows that when the capital stock increases by 1 percent while the labor stock remains constant, output increases by α percent. Similarly, we have β , which is the elasticity of output with respect to labor and shows that when the labor stock increases by 1 percent while capital remains constant, output increases by β percent.

According to the neoclassical view, capital accumulation drives economic growth in the short run. The neoclassical model posits that exogenous technological progress, rather than other structural factors like the rate of capital accumulation, drives long-term per capita output and productivity growth. In this sense, the Neoclassical Growth model is not really a long-run growth model because productivity growth is exogenous and caused by technical progress. However, the neoclassical model has proven to be helpful in understanding the factors contributing to output and productivity growth. According to the above theory, this study proposes the following hypothesis:

Hypothesis 2: SMEs' level of capital use has a positive impact on their labor productivity.

In addition, we argue that, compared to other types of businesses, family-owned SMEs tend to focus on investing time and resources to establish social and personal relationships. These relationships facilitate the smooth operation of businesses. Consequently, the study suggests the following hypothesis:

Hypothesis 3a: The positive impact of exports on the labor productivity of family-owned SMEs is less pronounced than that of non-family-owned SMEs.

Hypothesis 3b: The utilization of business capital exerts a less significant positive influence on the labor productivity of family-owned SMEs than that of non-family-owned SMEs.

3.2. Definition and measurement of variables

This study's dependent variable is SMEs' labor productivity (LP). The International Labor Organization (ILO, 2015) defines labor productivity as the total amount of output produced per unit of labor input (measured by the total number of employees) in a given reference period. In this study, to calculate labor productivity, we use sales revenue as an output measure and the total number of employees as an input measure (Fiouz Fallahi et al., 2010).

Independent variables are as follows:

Export (EXPORT): The export of goods is the act of taking goods out of Vietnam's territory or into a special area located in Vietnam's territory that is considered a separate customs area according to the provisions of law. Some arguments suggest that exporting enterprises are under more competitive pressure, and therefore they try to eliminate inefficiencies and improve productivity. In this study, we use a dummy variable to examine the export status of enterprises. If an enterprise has export activities, it will receive the value 1, and if it does not export, it will receive the value 0 (Papadogonas et al., 2005).

Enterprise capital intensity (CAPITAL): This is usually the ratio of total assets or fixed assets to revenue or labor input. When compared to revenue, this index determines the efficiency of a company in using its assets to produce goods or services (Chang and Singh, 1999). Many measures exist for measuring capital intensity, but in this study, we will use the natural logarithm of the ratio of the enterprise's total assets to total labor for data suitability (Dawson, 2014).

Ownership form (OWNERSHIP) is a moderate variable. Research has demonstrated the numerous advantages of organizing and operating a business in a family style, particularly in Vietnam, which has significantly boosted the national economy. We measure this variable using a dummy variable; if a family (or household) owns the business, it receives a value of 1, otherwise it gets a value of 0 (Gill and Kaur, 2015).

Control variables: Empirical studies on labor productivity at the micro-enterprise level provide evidence of the impact of other factors affecting labor productivity, in addition to the main groups of factors previously mentioned. These factors include:

Average wage (WAGE): This variable refers to the average salary earned by each working employee. We measure it using the average salary an employee receives each month.

Firm size (SIZE): Jiang (2003) defines firm size as “employees per establishment, employees per firm, sales per firm, and value added per firm.” Existing literature describes many measures of firm size. However, in this study, we use the natural logarithm of total assets, similar to Shepherd (1972), as a measure of firm size.

Firm age (FIRMAGE): This variable reflects the firm’s operating experience. This study measures experience by subtracting the survey year from the firm’s founding year (Cucculelli and Mannarino, 2014). A larger value represents a longer number of years of operation.

Age of the worker (AGE): Measured by the number of years the survey was conducted minus the year of birth of the worker, the larger the value, the older the worker (Van Dalen et al., 2010).

Gender of the worker (GENDER): Xie and Shauman (1998) measure this variable using a dummy variable, assigning a value of 1 for a male worker and 0 for a female worker.

3.3. Estimation method

With the method of measuring the dependent variable and the data in use, the study applies the OLS method to estimate the impact of exports and the level of capital use on the labor productivity of SMEs. The following equation illustrates the estimated relationship:

$$\begin{aligned} \ln LP = & \beta_0 + \beta_1 EXPORT + \beta_2 CAPITAL + \beta_3 OWNERSHIP + \beta_4 CAPITAL * OWNERSHIP \\ & + \beta_5 EXPORT * OWNERSHIP + \beta_6 \ln WAGE + \beta_7 \ln SIZE + \beta_8 FIRMAGE + \beta_9 AGE \\ & + \beta_{10} GENDER + \varepsilon \end{aligned} \quad (2)$$

Where, the dependent variable (LP) signifies the labor productivity value, and β_0 serves as the constant term. The estimated coefficients of independent and moderator variables are denoted by β_{1-4} , while *EXPORT* is a dummy variable representing the export status of SMEs, and *CAPITAL* indicates the level of capital intensity by SMEs. Additionally, β_{6-10} are the estimated coefficients of control variables. The interaction variables between the level of capital intensity, exports, and the ownership structure of enterprises are represented by $\beta_{4,5}$, respectively.

TABLE 1: Variable interpretation in the research model and expectations about the impact of independent and control variables on the dependent variable

| Variables | Measurement | Expectation |
|-----------------------------|---|--------------------|
| Labor productivity (LP) | The natural logarithm of sales revenue/total labor in the survey year | |
| Export (EXPORT) | A dummy variable, taking the value 1 if the enterprise exports, 0 if it does not | + |
| Capital intensity (CAPITAL) | The natural logarithm of total assets/labor in the survey year | + |
| Ownership (OWNERSHIP) | A dummy variable, taking the value 1 if the enterprise is family-owned, 0 otherwise | + |
| Average Wage (WAGE) | The natural logarithm of the average monthly wage per worker at the survey time | + |
| Firm size (SIZE) | The natural logarithm of total assets in the survey year | + |
| Firm age (FIRM AGE) | The number of years the enterprise has been operating since its establishment | + |
| Worker age (AGE) | The age of the worker in the survey year | - |
| Worker gender (GENDER) | A dummy variable, taking the value 1 if male, 0 if female | + |

Source: Authors' own compilation.

3.4. Data sources

This study uses secondary data from the enterprise survey conducted from 2013 to 2015 in ten provinces, which covered 2,500 to 2,800 enterprises. The number of non-state manufacturing enterprises is based on two data sources from the General Statistics Office of Vietnam (GSO): the Census of Establishments since 2002 (GSO, 2004) and the 2004 - 2006 Industrial Survey (GSO, 2007). The GSO supplemented the industrial survey (GSO, 2004) with data on businesses officially registered at the provincial level under the Enterprise Law.

This increased the number of private businesses, collectives, partnerships, limited liability businesses, and joint-stock businesses, but it left out joint-venture businesses. In addition to enterprises registered with formal organizations, the SME survey data also included business households (not officially registered). Initially, the data included 2,628 enterprises; however, for some indicators (variables in the model), the enterprises did not respond, resulting in a final count of 1,800 observations.

Table 2 presents the frequency, mean, standard deviation, minimum, and maximum values of the variables in the research model prior to logarithmic transformation. The dependent variable ranges from 5,026.982 to 130,000,000, with higher values indicating greater labor productivity. This range highlights a substantial disparity in labor productivity among enterprises, reflecting real-world differences based on enterprise size. Specifically, labor productivity in micro and small enterprises is approximately 70 percent of that in medium and large enterprises.

Capital intensity values range from 4,523,982 to 8,381,289, with an average of 442,823.7, suggesting that the level of capital intensity among SMEs at the time of the survey was relatively low. The export variable has a mean value of 0.521, indicating that 52.1 percent of the enterprises in the sample are exporting.

The average salary variable has a mean of 3,180,671, with a minimum of 98,000 and a maximum of 10,000,000. The enterprise size variable ranges from 450,427.9 to 92,900,000,000, with larger values corresponding to larger enterprises. The firm age variable has a mean of 18.183, with values ranging from 2 to 61; higher values indicate longer operating periods for the enterprises. The worker's age varies from 21 to 89. Finally, the two variables ownership form and employee gender have mean values of 0.656 and 0.593, respectively, implying that 65.6 percent of the firms are family-owned and 59.3 percent of the employees are male.

TABLE 2: Descriptive statistics of variables before taking logarithms

| Variables | Mean | Standard deviation | Min | Max |
|-----------|-----------------|--------------------|---------|----------------|
| LP | 499,470.900 | 3,829,900.0 | 5,027 | 130,000,000 |
| EXPORT | 0.521 | 0.5 | 0 | 1 |
| CAPITAL | 442,823.700 | 660,073.3 | 4,524 | 8,381,289 |
| WAGE | 3,180,671.000 | 1,905,666.0 | 98,000 | 10,000,000 |
| SIZE | 627,000,000.000 | 3,460,000,000.0 | 450,428 | 92,900,000,000 |

| | | | | |
|-----------|--------|------|----|----|
| FIRMAGE | 18.183 | 9.6 | 2 | 61 |
| AGE | 48.018 | 11.0 | 21 | 89 |
| OWNERSHIP | 0.656 | 0.5 | 0 | 1 |
| GENDER | 0.593 | 0.5 | 0 | 1 |

Source: Authors' own compilation.

TABLE 3: Descriptive statistics of variables after taking the logarithm of some variables

| Variables | Mean | Standard deviation | Min | Max |
|------------------|-------------|---------------------------|------------|------------|
| LP | 12.32 | 0.91 | 8.52 | 18.67 |
| EXPORT | 0.52 | 0.45 | 0.00 | 1.00 |
| CAPITAL | 12.33 | 1.18 | 8.41 | 15.93 |
| WAGE | 14.39 | 1.52 | 11.49 | 16.12 |
| SIZE | 18.64 | 1.74 | 13.02 | 25.26 |
| FIRMAGE | 18.18 | 9.60 | 2.00 | 61.00 |
| AGE | 48.02 | 11.00 | 21.00 | 89.00 |
| OWNERSHIP | 0.66 | 0.48 | 0.00 | 1.00 |
| GENDER | 0.59 | 0.49 | 0.00 | 1.00 |

Source: Authors' own compilation.

Table 4 shows the values of the variance inflation factor (VIF) and the correlation coefficients between the variables in the research model. To test the model's variance, we use the Breusch-Pagan test. The results show that the model has a phenomenon of variable variance ($p = 0.000$), so we make adjustments when estimating the regression model using the robust method. The results of the correlation matrix analysis show that all the correlation coefficients of the independent variables and control variables in the model are very low (<0.8). In addition, although the level is not high, both independent variables have a positive impact on the dependent variable of labor productivity, with confidence levels of 95 percent and 99 percent, respectively. In addition, the results show that all VIF values are small (<10). It means that there is no multicollinearity when considering all these variables simultaneously in the research model. The above results imply that the estimation is not statistically biased. Table 5 presents the model estimation results.

TABLE 4: Correlation matrix between variables in the model

| | VIF | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------|------|-----------|----------|-----------|-----------|-----------|----------|----------|----------|-------|
| LP | | 1.000 | | | | | | | | |
| EXPORT | 1.01 | 0.05** | 1.000 | | | | | | | |
| CAPITAL | 2.80 | 0.423*** | -0.059** | 1.000 | | | | | | |
| WAGE | 1.25 | 0.337*** | 0.006 | 0.210*** | 1.000 | | | | | |
| SIZE | 3.94 | 0.476*** | -0.012 | 0.743*** | 0.357*** | 1.000 | | | | |
| FIRM AGE | 1.17 | -0.183*** | -0.027 | -0.085*** | -0.160*** | -0.180*** | 1.000 | | | |
| AGE | 1.22 | -0.156*** | -0.029 | 0.019 | -0.123*** | -0.162*** | 0.324*** | 1.000 | | |
| OWNERSHIP | 1.96 | -0.358*** | -0.044* | -0.190*** | -0.409*** | -0.565*** | 0.250*** | 0.233*** | 1.000 | |
| GENDER | 1.07 | -0.045* | 0.037 | 0.005 | -0.121*** | -0.099*** | 0.032 | 0.198*** | 0.152*** | 1.000 |

Note: *, **, and *** represent statistical significance levels at 10%, 5%, and 1%, respectively.

Source: Authors' own compilation.

4. Estimation Results

Table 5 displays the results from estimating the model variables using the OLS method. This approach allows for an examination of the individual effects of control variables on the dependent variable, the effects of each independent variable on the dependent variable in isolation, and the combined effects of both independent and control variables on labor productivity.

TABLE 5: Estimation results for variables in the model

| Variables | Model 1 | Model 2 | Model 3 | Model 4 |
|------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Constant | 7.585*** (0.408) | 7.514*** (0.409) | 6.812*** (0.409) | 2.712*** (0.432) |
| <i>Independent variables</i> | | | | |
| EXPORT | | 0.085** (0.037) | 0.096** (0.029) | 0.112*** (0.036) |
| CAPITAL | | | 0.228*** (0.025) | 0.236*** (0.028) |
| <i>Moderator variable</i> | | | | |
| OWNERSHIP | | | -0.202*** (0.049) | -0.288*** (0.051) |
| <i>Interaction variables</i> | | | | |
| EXPORT*OWNERSHIP | | | | 0.144** (0.073) |
| CAPITAL*OWNERSHIP | | | | 0.261*** (0.103) |
| <i>Control variables</i> | | | | |
| WAGE | 0.269*** (0.036) | 0.269*** (0.035) | 0.259*** (0.035) | 0.272*** (0.033) |
| SIZE | 0.191*** (0.013) | 0.192*** (0.013) | 0.046*** (0.021) | 0.055** (0.028) |
| FIRM AGE | 0.006*** (0.002) | -0.006*** (0.002) | -0.005** (0.002) | -0.005** (0.002) |
| AGE | -0.004** (0.002) | -0.004** (0.002) | -0.006*** (0.002) | -0.006*** (0.002) |
| OWNERSHIP | -0.117** (0.050) | -0.111** (0.050) | -0.302*** (0.053) | -0.297*** (0.053) |
| GENDER | 0.060 ^{ns} (0.039) | 0.056 ^{ns} (0.039) | 0.043 ^{ns} (0.038) | 0.037 ^{ns} (0.038) |
| R ² | 0.2699 | 0.2721 | 0.3013 | 0.3245 |

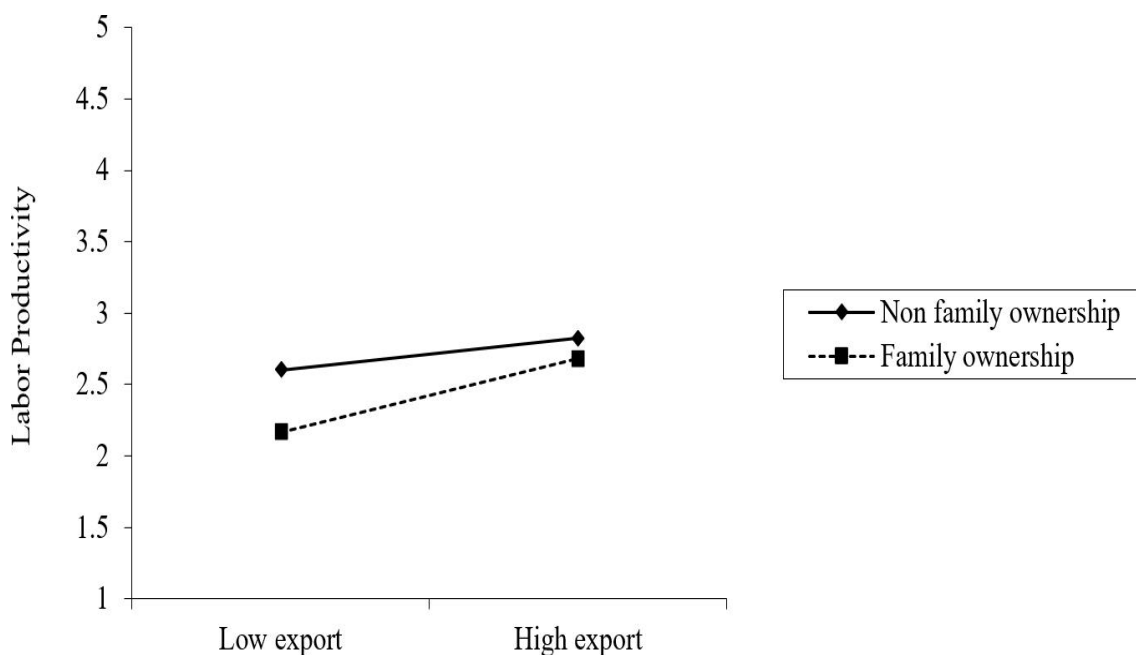
Note: *, **, and *** represent statistical significance levels at 10%, 5%, and 1%, respectively; values in parentheses are the standard errors of each variable in the estimated models.

Source: Authors' own compilation.

The Model 1 only considers the impact of control variables on labor productivity. Specifically, the variables considered are average wages, enterprise size, enterprise operation time, employee age, and employee gender. In this model, the control variables explain 26.99 percent of the variation in labor productivity. The P value shows that the model is statistically significant at the 1 percent level. In particular, average wages, enterprise size, and enterprise operation time are statistically significant at the 1 percent level. At a statistical significance level of 5 percent, both employee age and ownership form negatively impact productivity. The gender variable was not statistically significant.

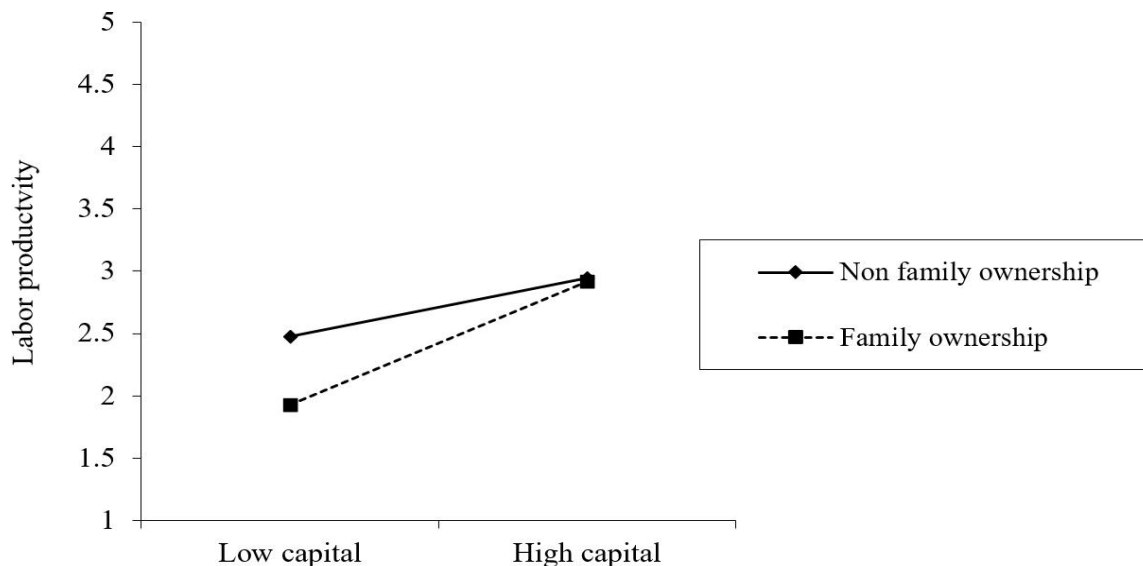
Model 2 examines the impact of export variables and control variables on enterprise labor productivity. The fluctuation in labor productivity depending on 27,21 percent of the variables considered, and its reliability is 99 percent. The findings show that the export variable has a positive impact on labor productivity, with statistical significance at the 5 percent level. The coefficient β shows that exporting enterprises have higher labor productivity than non-exporting enterprises. This fact means that export activities can boost enterprises' labor productivity. Therefore, hypothesis 1 (exports positively influence the labor productivity of SMEs) should not be rejected.

FIGURE 1: The moderating role of ownership type on the association between export performance and labor productivity



Model 3 examines how capital intensity and control variables affect the dependent variable. The model is statistically significant at the 1 percent level. The variables included in the model can explain 30.13 percent of the change in labor productivity. The capital intensity variable has a positive impact on labor productivity, with a confidence level of 99 percent. In particular, if an enterprise's capital intensity level increases by 1 percent, its labor productivity increases by 0.228 percent. This shows that the more enterprises increase their capital intensity level, the more labor productivity will improve. Therefore, hypothesis 2 (the level of business capital intensity has a positive impact on labor productivity) should not be rejected.

FIGURE 2: The moderating role of ownership type in the association between capital and labor productivity



5. Discussion

Based on the outcomes of multivariate regression estimation, this study mainly discusses how ownership form affects the effects of exporting, how much capital businesses use, and the statistically significant control factors. Despite the weak impact on the export variable, the results suggest that participation in the export process enhances the labor productivity of SMEs. The strict requirements of foreign markets force SMEs to work harder and innovate. This finding has confirmed the existence of the learning-through-export effect in improving enterprise labor productivity. The capital use level represents each enterprise's financial potential. As the hypothesis developed in

Section 2 suggests, enterprises must have enough capital to invest in purchasing modern machinery, equipment, and technological lines to improve labor productivity. In addition, enterprises with higher capital intensity levels will have better conditions for paying workers. The estimated results from the OLS regression model fully support our hypotheses 1 and 2.

The variables of average wage and age of workers are significant at the 99 percent confidence level. According to Marshall's efficiency wage theory (1920), the higher the average salary of workers, the more motivated they are to work hard, improving the business's productivity. Conversely, as workers age, their productivity tends to decrease. This is because as workers age, their ability to adapt to changing circumstances, technology, and business models diminishes.

Regarding the moderating role of ownership, the results confirm that, for enterprises with family ownership, the positive impact of exports and the level of business capital use on labor productivity is lower than for enterprises with other ownership forms. This fact shows that labor productivity tends to be low for family-owned enterprises. The result is similar to the study of Đặng and Võ (2011). The findings show the conflicting reality in the perception and assessment of public and private issues, between the interests of enterprises and the interests of families, and between the separation of affection and reason in Vietnamese enterprises.

The enterprise size variable has a positive impact on labor productivity. This result shows that the more enterprises expand their business scale, the more opportunities they have to promote improved productivity because they have more opportunities to access the innovation process.

The operating time variable negatively impacts labor productivity, which means that the longer a business operates, the more likely it will experience a decline in labor productivity. Accordingly, despite having a lot of experience, older businesses will tend to operate in an inertial, stagnant manner and have difficulty with innovation (Miller and Shamsie, 2001).

6. Conclusions and implications

This study used the Learning by Exporting (LBE) theory, the Neoclassical Growth Theory, and the OLS regression method to establish a connection between SMEs in Vietnam's export activities, capital intensity level, and labor productivity. Through trade, enterprises absorb knowledge, transfer scientific advances, and develop strategies from business partners, customers, and even competitors. These factors have enhanced the efficiency of enterprises'

production processes, leading to increased labor productivity. However, the results show that the level of capital intensity is also a factor in promoting productivity. Facilitating access to formal and informal capital sources will enable enterprises to expand their production scale and invest in modern facilities and equipment, thereby enhancing labor productivity. The implications of this study are that to improve labor productivity, businesses need to increase their export capacity, conduct market research, and identify potential customers for consuming the business's products and services in new markets. In addition, it is necessary to clearly identify the needs of each type of good or service to determine the appropriate scale of capital investment given the current market and economic conditions. The government and organizations must simultaneously implement policies supporting interest rates in the state budget for loans from enterprises, cooperatives, and business households, enabling businesses to access bank capital at lower interest rates. Moreover, Vietnam's logistics services must develop a fleet of super-long and super-heavy vessels and modern logistics infrastructure to meet its import and export needs rather than relying on the fleet of foreign enterprises as it currently does.

Due to a lack of data sources, this study only presents a static picture of the impact of exports and capital use levels on SMEs' labor productivity. Furthermore, future studies should incorporate owner characteristics, such as education level, experience, gender, and so on, into the model to fully complete the research findings.

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