EXPORT PARTICIPATION, EMPLOYEE BENEFITS, AND FIRM PERFORMANCE: THE EVIDENCE FROM VIETNAM'S MANUFACTURING SMEs

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ABSTRACT

Vietnam has seen a significant rise in the number of SMEs since introducing the Enterprise Law in 2000. Non-state SMEs are playing a key role in economic growth, creating jobs, and reducing poverty. However, these non-state SMEs participate only modestly in export activity despite the high export performance of the economy. What are the factors impeding export participation? And how does the role of export performance affect employee benefits (e.g. higher wages) and firm performance? This thesis is the first study to provide empirical evidence for answering these research questions.

Chapter 3 investigates the causal relationship between export participation and productivity by examining two popular hypotheses, self-selection and learning by exporting. Using a balanced panel dataset from 2005-2009 for Vietnamese private manufacturing SMEs, the results show strong statistical evidence for the self-selection of more productive firms into the export market. The alternative hypothesis, learning by exporting, is shown to be invalid by employing a fixed-effect panel data estimation and a fixed-effect instrumental variable regression**.** This study also reveals that export participation has no impact on technical efficiency, technical progress, and scale change.

Chapter 4 explores the role of export participation in increasing employee benefits in terms of wages and employment quality.[1] First, based on a unique, matched firm-worker panel dataset between 2007 and 2009, the study shows that export participation has a positive impact on wages when taking into account only

[1] Employment quality is defined as worker contract status (Rand and Torm, 2011).

firm characteristics. However, the exporter wage premium falls and dissipates when both firm and worker characteristics are controlled for. In addition, the effect decreases further and becomes less significant when controlling for time-invariant, unobservable factors by a spell fixed-effect estimation.[2] Second, using a firm level balanced panel dataset in the same period, the results show that there is a positive linkage between export participation and the share of casual workers. However, the effect of export participation on wages and employment quality varies greatly across sectors.

Chapter 5 investigates linkages between export participation, firm survival and profitability in Vietnam. Using an unbalanced panel dataset from 2005 to 2009, the study shows no difference in survival probability between exporters and non-exporters. However, the probability of a firm's survival is greater for those who engage continuously in export but is lower for firms which have ceased export activity, as indicated by their export status at different stages. Using ordinary least squares (OLS) to consider the relationship between firm profitability and export activity, the results indicate that export status is not related to firm profit growth. However, a quantile regression approach shows that export participation is positively related to profitability for firms with high profit growth but negatively related for those firms with low profit growth. This might suggest that the productivity advantages of exporters with low profit growth are absorbed by costs relating to trading activities in overseas markets.

[2] Spell fixed effect estimation is a fixed effect method for the linked employee-employer data. More details for this method, please see Andrews and Schank (2006).

This thesis may have several potential policy implications. First, export promotion policies may not be effective if they are not accompanied by strategies to help SMEs become more productive. In addition, policies encouraging and supporting exports should focus not only on the number of employment created but also on the quality of employment, especially for low-technology industries. Finally, export-promoting policies (e.g. improvement in firms' innovative activities) coupled with policies maintaining firms' positions in export markets could be helpful since these measures in turn may help firms improve their survival probability and profit growth. However, the policy issues are very complicated and these suggestions should therefore be considered an initial foundation for further study.

NOTES ON PUBLICATIONS

A number of journal articles and conference papers have been produced from this thesis as follows.

JOURNAL ARTICLES

Huong Vu, Steven Lim, Mark Holmes and Tinh Doan "Firm exporting and employee benefits: First evidence from Vietnam manufacturing SMEs" 2013, *Economics Bulletin*, vol. 33(1), 519-535.
(This paper was based mostly on Chapter Four.)

Tuyen Tran, Steven Lim, Michael Cameron and Huong Vu "Farmland loss and livelihood outcomes: A micro-econometric analysis of household surveys in Vietnam," *Journal of the Asia-Pacific Economy,* vol.19(3), 423-444
(This paper was based on some discussion in methodology part of Chapter Three.)

Huong Vu and Steven Lim "Exports and firm survival: The first evidence from Vietnam manufacturing SMEs" 2013, *Economics Bulletin*, vol. 33(2), 1259-1268
(This paper was based mostly on Chapter Five.)

Huong Vu, Mark Holmes, Steven Lim and Tuyen Tran "Exports and profitability: A note from quantile regression" 2014, *Applied Economics Letters.* vol. 21(6), 442-445 (This paper was based mostly on Chapter Five.)

CONFERENCE PAPERS

Huong Vu, Steven Lim and Mark Holmes "Higher productivity in exporters: Self-selection, learning by exporting or both? The evidence from Vietnamese SMEs". Paper presented at the 16th Annual Waikato Management School Student Research Conference, the University of Waikato, Hamilton, New Zealand (October, 2012). (This paper was based mostly on Chapter Three.)

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LIST OF ABBREVIATIONS

AFTA	ASEAN Free Trade Area
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ASMED	Agency for SME Development
BTA	Bilateral Trade Agreement
CEPT	The Common Effective Preferential Tariff
CEMA	Council for Mutual Economic Assistance
CIEM	Central Institute for Economic Management
DEA	Data Envelopment Analysis
DANIDA	Danish International Development Agency
EU	European Union
ERP	Effective Rate of Protection
FDI	Foreign Direct Investment
FPM	Fractional Probit Model
GSO	General Statistical Office, Vietnam
GDP	Gross Domestic Product
IV	Instrumental Variable
ILO	International Labour Organization

GMM	Generalised Method of Moments
MPI	Ministry of Planning and Investment
ODA	Official Development Assistance
OLS	Ordinary Least Squares
OPEC	Organization of Petroleum Exporting Countries
SFPF	Stochastic Frontier Production Function
SITC	Standard International Trade Classification
SME	Small and Medium Enterprise
SOE	State Owned Enterprise
TFP	Total Factor Productivity
TPc	Technical progress change
TEc	Technical efficiency change
SEc	Scale efficiency change
UNIDO	United Nations Industrial Development Organization
US	United States
VCCI	Vietnam Chamber Commerce And Industry
VND	Vietnamese Dong
WB	The World Bank
WTO	World Trade Organization

CHAPTER ONE: INTRODUCTION

1.1 Statement of the problem

Since the introduction of the renovation policy (Đổi Mới) in 1986, Vietnam has shifted from a centrally planned economy to a market-oriented one. The country has witnessed great success from the implementation of various reform measures, which have focused mainly on the encouragement of foreign direct investment and the promotion of export-oriented industries. The economy achieved an annual average GDP growth rate of 6.8% during the 1986-2009 period (Le, 2010). The GDP per capita growth of low and middle income countries was always lower than that in Vietnam during the period 1988-2006 (Markussen et al., 2012). In addition, there has been a significant improvement in the share of GDP by different sectors. A steady decline in the agricultural sector share from 40.6% in 1986 to 18% was recorded in 2008, while the share of the industry and service sectors increased significantly (from 28.4% to 42% and from 31% to 44% respectively in the same period).[3] Furthermore, the poverty rate in Vietnam fell from nearly 60% in the early 1990s to 20.7% in 2010 (World Bank, 2012).

Exports are one factor that contributed greatly to Vietnam's economic success. The average annual export growth rate was 21.2%, almost doubling the GDP growth rate in the 1986-2007 period. Export values increased nearly sixty fold from US$789 million in 1986 to US$48.6 billion in 2007 and the export share of total trade increased steadily from 35.7% in 1986-1990 to 45% in 2001-2007.

[3] Statistical yearbook (various issues) from Vietnam General Statistical Office.

The most impressive figure reached was around US$62.7 billion in 2008, the highest export turnover ever seen in Vietnam.[4]

The Vietnamese private sector also, especially small and medium sized enterprises (SMEs), constitutes another important factor contributing to this success. First, SMEs play an important role in employment generation. In 2005, for example, 2.5 million jobs were created by SMEs (Trung, Tung, Dong, and Duong, 2009). SMEs are also regarded as the main engine for alleviating poverty, especially in rural areas (Kokko and Sjöholm, 2005). Furthermore, the Vietnamese economy is numerically dominated by SMEs, with 96% of the total number of enterprises contributing nearly 40% of GDP and 32% of total investment in 2006 (Hung, 2007).

However, the contribution of SMEs to export growth is still modest in comparison with neighbouring countries. Only a small percentage of Vietnamese SMEs, nearly 20%, was engaged in exports, while China, India, Taiwan, and South Korea witnessed significant contributions of SMEs to exports, with approximately 60%, 38%, 56%, and 40% respectively in the 1990s **(**United Nations Conference on Trade and Development, 2003, as cited in Tambunan (2007)). Furthermore, considering only domestic non-state manufacturing SMEs, recent surveys reveal that export participation ranged from 3% to nearly 6% in the period 2002-2009 (Cuong, Rand, Silva, Tam, and Tarp, 2008; Cuong et al., 2010; Kokko and Sjöholm, 2005; Rand and Tarp, 2006).

[4] Statistical yearbook (various issues) from the Vietnamese General Statistical Office.

In a rapidly changing international market environment and especially now that Vietnam is a member of the World Trade Organization (WTO)**,** there are several reasons for SMEs to participate in the export market. The most obvious reason is the opportunity for firms to expand in scale and markets (Van Biesebroeck, 2005). Exporting allows firms to enter new markets, which can lead to larger volumes of sales and production, and this may generate revenue growth and higher profit. In addition, the presence of SMEs in export markets can lead to an increase in market strength and ensure a higher survival probability than for non-exporters (e.g., Bernard and Jensen, 1999; Esteve-Pérez, Mánez-Castillejo, and Sanchis-Llopis, 2008).

Furthermore, export participation helps enterprises improve their financial health in terms of higher liquidity ratio and lower leverage ratio compared to non-exporters (Greenaway, Guariglia, and Kneller, 2007). Another reason for participating in the export market is learning by exporting. New knowledge, exposure to intense competition, and understanding international markets help firms enhance their productivity when exporting (e.g., Baldwin and Gu, 2003; Park, Yang, Shi, and Jiang, 2010). Without such participation, these firms may become outdated and continue to use inappropriate marketing or management strategies, which may result in inefficiency and threaten their long term prospects.

In the Vietnamese context, the importance of a firm's participation in the export market has been recognized in previous studies. For example, Kokko and Sjöholm (2005) show that the Vietnamese domestic market is small. Thus, participating in the export market may promote the growth of enterprises. In addition, export participation helps firms improve their productivity, and increase

revenue (Hiep and Ohta, 2009). Some studies also indicate that export participation and growth help create and expand employment (e.g., Jenkins, 2004; Kien and Heo, 2009).

Despite the studies mentioned above, questions still remain about export performance, especially for non-state domestic manufacturing SMEs. First, whereas export participation may greatly benefit firms, it is less clear why many domestic non-state manufacturing SMEs have not taken advantage of opportunities to participate in exporting. What challenges and barriers hinder them from participating in export activities?

Second, little is known so far about the impact of export participation on the performance of Vietnamese non-state manufacturing SMEs and their workers. An export-led growth strategy remains the top priority in Vietnam, especially for SMEs. As noted by Bernard and Jensen (1999), a lack of empirical evidence on what may happen to firms after entering export markets adversely affects the government's ability to adopt appropriate policies. Accordingly, to fill the gap that exists in current literature, this thesis aims to supply empirical evidence of the role of exports in firms' performance and employee benefits. The objectives and research questions are laid out in detail in the following section.

1.2 Objectives and research questions

This research focuses on Vietnamese domestic non-state manufacturing SMEs, investigating the factors impeding firms' participation in exports and the role of exporting in the performance of firms and their workers. More specifically, this thesis has three research questions.

1. What is the causal relationship between export performance and firm productivity?

2. What are the linkages between a firm's exporting activity and employee benefits?

3. What is the role of export participation in firm survival and growth?

The first research question relates to productivity and the competitiveness of Vietnamese SMEs. To this point, we do not know whether non-state manufacturing SMEs with high productivity self-select for participation in export markets or whether they improve their productivity and learn by doing i.e., by exporting (e.g., accessing new technology or designs, receiving technical assistance from their overseas customers). These issues will be explored in the following sub-questions.

1.1 What is the role of productivity for non-state domestic manufacturing SMEs in their becoming exporters?

1.2 What is the impact of firms' exporting activities on productivity growth and its decomposition?

The second question considers the role of firm export behaviour on their workers. I will address this through two sub-questions.

2.1 What is the difference in wages for workers in SMEs which export compared with those in SMEs which do not?

2.2 What is the difference in employment quality between exporting and non-exporting SMEs?[5]

Finally, while the second question considers the linkage between export participation and benefits for a firm's employees, the third question explores another aspect regarding the linkage between export participation and specific aspects of a firm's performance. Specifically, this matter is considered through two sub-questions.

3.1 What is the effect of export participation on the survival of private SMEs?

3.2 What role does export participation play in the growth of SME profit?

1.3 Research methods

In order to achieve these objectives, this thesis employs various sets of data and micro-econometric methods. First, to evaluate whether high productivity is either the cause or a consequence of a business's decision to export, the research uses data from the "Small and Medium Scale Enterprise Survey in Vietnam." Surveys were conducted in 2005, 2007 and 2009 as collaboration between the Institute of Labour Science and Social Affairs, the Central Institute for Economic Management and the University of Copenhagen. These surveys, sponsored by the Danish International Development Agency, used similar questionnaires and covered both new entries and "repeat" private manufacturing firms in ten provinces of three regions (South, Central and North) in Vietnam.[6]

[5] Employment quality is defined as worker contract status (Rand and Torm, 2011).

[6] For the provinces covered in the survey, see Appendix 1.

Secondly, two datasets are used to compare the difference in employee benefits in exporting and non-exporting firms. The first is an employer module in the period 2006/2007 and 2008/2009. The second is an employee module conducted at the same time. Combining the two modules creates a unique Vietnam worker-firm panel dataset for SMEs. The availability of worker-firm panels allows the measurement not only of the impact of firm characteristics but also of the effects of worker characteristics.

Finally, the role of export participation in the survival and growth of firms is investigated through using the same dataset from 2005-2009 as in Objective 1. Detailed information concerning the dataset and micro-econometric methods applied in this thesis to achieve each objective are presented in Chapters Three, Four and Five respectively.

1.4 Contribution to knowledge and the significance of the research

Although there has been much debate concerning the causal linkage between exporting and firm productivity, there is no consensus as to the conclusion (Wagner, 2007, 2012). In addition, while the contribution of SMEs for the development of the Vietnamese economy in terms of employment generation, GDP, and poverty alleviation has been well documented, our understanding of SME international behaviours is limited (Kokko and Sjöholm, 2005; Le, 2010; Trung et.al, 2009). Hence, this study will be among the first to contribute to the literature, not only in its discussion of factors hindering SMEs from becoming exporters but also dealing with the impact of export participation on firm productivity and its decomposition.

Much research has been done on the impact on wages of export participation (e.g., Milner and Tandrayen, 2007; Schank, Schnabel, and Wagner, 2007). The findings are mixed, however, and it is hard to make general inferences. The second central aim of this study, therefore, is to extend the literature by providing the first econometric evidence dealing with the linkage between firms' participation in export business and employee wages for Vietnamese non-state SMEs. Contrasting with our understanding of the connection between a firm's engagement in export business and wages, few studies consider the linkage between a firm's exporting and employment quality. By adapting a theoretical model, this study also contributes to general knowledge by offering empirical evidence of this linkage in the Vietnamese context.

Finally, the way export participation affects a firm's performance, its survival and growth is investigated in the last empirical chapter. While some studies show that export activities help firms increase the probability of their survival and growth, others find export participation to be harmful for firms' survival and growth (e.g, Capolupo and Petragallo, 2010; Esteve-Pérez et al., 2008; Giovannetti, Ricchiuti, and Velucchi, 2011; Lu and Beamish, 2006). The evidence dealing with the linkage between a firm's export activities and its growth in profits is limited to only European countries (Wagner, 2012). In addition, the effect of export performance on a firm's profit growth is unclear. Thus this thesis contributes to the current literature by presenting new evidence of the impact of a firm's engagement in exports on its survival and profit growth in Vietnam.

The findings in the thesis assist not only in understanding the role of export performance in the economy but also facilitate evidence-based policy

evaluation. The output of this study will thus provide the empirical evidence for re-evaluating the suitability and significance of export-promoting policies, especially for domestic non-state manufacturing SMEs.

For example, the study shows that although Vietnam has vavious activities to provide support for the participation of SMEs in exporting, these may not be effective if they are not accompanied by strategies to help SMEs become more productive. In addition, some previous research shows that Vietnam has been successful in creating employment with an export-led growth strategy. However, my study indicates that there is a negative relationship between export participation and employment quality, especially for low technology sectors. Hence, these results may suggest the policy implication that policymakers should pay more attention to improving employees' contract status in order to protect them from the uncertainties of employment contracts.

1.5 Outline of the thesis

Chapter 2 provides an overview of trade reform, export performance and the development of non-state SMEs. The chapter begins with a brief discussion of trade policy reforms relating to export activity, followed by a discussion of export performance from three aspects: trends, compositions and destinations. It ends with an analysis of changes in the non-state sector during various periods, and SME development, constraints and government support.

Chapter 3 presents the findings concerning a causal linkage between export participation and productivity growth in Vietnam. It uses a panel balanced dataset

for 2004/2005, 2006/2007 and 2008/2009 to determine the direction of this relationship.

Chapter 4 discusses the findings concerning the linkage between export participation and employment benefits. For considering the linkage between export and wages, the dataset is based on a combination of employee and employer modules in the period 2006/2007 and 2008/2009, and a firm-level panel balanced dataset in the same period is used to consider the linkage between export and employment quality.

Chapter 5 focuses on the role of export participation in the survival and growth of non-state private SMEs. The analyses also utilise a panel dataset from 2005-09.

Chapter 6 presents the conclusion, recommendations and limitations of this research.

CHAPTER TWO: AN OVERVIEW OF TRADE REFORMS, EXPORT PERFORMANCE AND THE DEVELOPMENT OF NON-STATE SMEs IN VIETNAM

2.1 Introduction

During the pre-reform era, Vietnam implemented a centrally planned economy which faced many difficulties, such as the shortage of food and commodities, a high trade deficit, low growth rate and three digit hyperinflation (Han and Baumgarte, 2000). These serious difficulties acted as a wake-up call for the Vietnamese government to initiate the renovation process (Đổi Mới). The renovation began in 1986 and this year marked the transition from a centrally planned economy to a market economy in Vietnam. Two of the main targets of the renovation process were the development of non-state sectors, trade policy reform and a focus on export-led growth.

First, Vietnam came under pressure to reduce the size of the state-owned sector because it was uncompetitive, inefficient and failed to absorb the expanding labour force (Bich, 2008). As a result, the private sector emerged and the growth of small and medium-sized enterprises (SMEs) has become a dynamic force in the development of the Vietnamese economy during this process.

Second, Vietnam has also pursued economic growth strategies based on export promotion, coupling this process with trade policy reform. While the reform process was inaugurated in 1986, trade reforms were introduced later, in 1989 (Thanh, Minh, Hoang, Duong, and Long, 2007). According to Auffret (2003), trade policy reform had two main objectives. The first was to shift a centrally planned economy to a market-oriented one by various policies. For

example, the government liberalised the price system in domestic markets to establish a link with world prices. It also relaxed regulations on foreign transactions, developed trade policy instruments, and removed exchange rate distortions. The second objective was to promote export-oriented industries while simultaneously protecting a wide range of industrial goods and sectors.

The aim of this chapter is to provide the context for the empirical study that follows. The chapter will first give an overview of trade reforms in relation to the export performance of the Vietnamese economy, including the trading rights of private firms, participation in trade agreements, the protection of domestic production and export promotion policies. Second, it provides a picture of the general export performance of the Vietnamese economy, focusing on three dimensions: export trends, the commodity compositions of exported goods and a geographic profile of Vietnamese exports. Finally, it offers definitions and the evolution and constraints of SMEs as well as the role of government in their development.

2.2 Trade reforms and export performance

2.2.1 Trade reforms in Vietnam

There is a wide range of aspects that arise in relation to trade reform in Vietnam. This section reviews four core aspects of trade reforms associated with export performance. First, when it was a matter of the trading rights of non-state firms, private ownership was considered the "enemy'' of socialism before renovation (Han and Baumgarte, 2000). Consequently, trading activities with the country's main trading partners in the Soviet bloc were controlled by state companies. During the early period of trade reform (1989-1997), trading activities

still remained severely limited (Thanh, 2005). Decree 57 in 1998 was considered an important legal decision for ensuring the right of domestic firms to trade freely.[7] The trading rights of non-state firms made another step forward in 2002 when firms with foreign investment were allowed to export other goods besides those they produced themselves.

Another step of progress on the road to trade liberalisation in the Vietnamese economy was the forging of bilateral and multilateral trade agreements. An official trade relationship between Vietnam and the European Union (EU) was established in 1992 and this opened the way to cooperation between Vietnam and the member nations of the EU. Vietnam became a member of ASEAN in July 1995 and officially joined the AFTA (the ASEAN Free Trade Area) on 15th December 1995 by signing the CEPT agreement (Common Effective Preferential Tariff).

In 1998, Vietnam became a member of the Asia-Pacific Economic Cooperation (APEC) group, reflecting a much deeper integration into the world economy. More importantly, a bilateral trade agreement (BTA) signed between Vietnam and the US in 2001 was considered one of the most important milestones for trade. This agreement opened up great opportunities for Vietnamese goods to enter the biggest market in the world. Recently, in 2007, Vietnam officially became the 150th member of the World Trade Organization. As documented by Abbott, Bentzen, and Tarp (2009), each time Vietnam established a bilateral or multilateral trade agreement, the value of trade with the relevant country or country group improved significantly.

[7] For more detail, see http://www.dncustoms.gov.vn/web_english/english/nghi_dinh/ND-57_98.htm

A further aspect of trade reform is the introduction of protective measures for domestic production. In 1988, reflecting changes in tariff policy, import tariffs with rates from 0-60% were imposed on 130 categories of goods. Since then, tariff laws have been fine-tuned several times. For example, a new import/export law was implemented in 1991 distinguishing normal from preferential tariffs.[8] In addition, the amendment of the law on import and export duties in 1992 was associated with the introduction of a harmonized commodity description (HS) with a detailed, consolidated schedule (Thanh et al., 2007).

At present, according to Athukorala (2006), three different tariff rates are applied in Vietnam. The first is used for ASEAN member countries under the CEPT agreement. Most favoured nation (MFN) tariff rates apply for EU countries, Japan and most nations outside ASEAN. The last comprise the general/normal rates applied to imports from other countries with a rate 50% higher than MFN rates. In general, under international trade liberalisation, changes in tariff structure reflect a trend towards increasingly selective protection (Athukorala, 2006). For example**,** tariffs on inputs and intermediate goods tend to be relatively low while tariffs on consumer goods are high.

Quantitative restrictions and foreign exchange management are used as non-tariff barriers in controlling imports to Vietnam. According to Thanh (2005), nine major products including petroleum, fertiliser, steel, cement, construction glass, motorcycles, 12-seater vehicles, paper, sugar and liquor were covered by import quotas in 1998. With the Asian financial crisis, however, the number of products under import restrictions doubled in 1999. Improvement in the trade

[8] Eighty countries that had trade agreements with Vietnam received the preferential rate with tariff levels 50% lower than normal rates (Thanh, 2005).

liberalisation process was coupled with the gradual elimination of quantitative restrictions. At present, only two products (sugar and petroleum) are subject to import quotas.

Foreign exchange management was implemented as an additional tool to protect domestic production. The first and most important decision was Decree 161/ HDBT with very strict controls on foreign exchange. In August 1998, Decree 63 made it possible to have a foreign currency savings account. In 1998, after the Asian crisis, the Central Bank (the State Bank of Vietnam) imposed a foreign surrender requirement for exporters, requiring them to sell 80% of their foreign exchange earnings to banks. This restriction was reduced to 50% in 1999, then 40% and 30% in 2001 and 2002 respectively. This requirement was removed in 2004 (Athukorala, 2006).

Finally, export promotion policies have been another aspect of trade reform. The central purpose of these policies is to promote exports through export incentives. Thanh (2005) provides a detailed description of export promotion measures. First, a duty drawback scheme was introduced in 1991 to enable exporters to secure refunds for duty payments on imported inputs used for export production. In addition, the Vietnamese government set up export processing-zones in the southern and northern regions. Firms operating in these regions gained many incentives such as duty-free access to all inputs and tax concessions. Furthermore, export credit was introduced as another policy tool for ensuring that exporters had access to credit without discrimination. Last but not least, in the early years of the reform process, Vietnam introduced export duties on a number of export items with the aim of protecting the environment, conserving natural

resources and reserve inputs for domestic production. In 1998, however, most export duties were basically removed except for two commodities (crude oil and scrap metal).

2.2.2 Vietnam's export performance

In view of this background to trade reform, as displayed in Figure 2.1, Vietnam's total export value (in current US dollars) experienced significant growth from nearly US$14.5 billion in 2000 to US$72.2 billion in 2010. In addition, as shown in Figure 2.1, there are three important cornerstones affecting Vietnamese export growth throughout this period. The first was the trade agreement signed with the USA in 2001. Since this date, the agreement has spurred a significant increase in the export of Vietnamese goods to the US market. In addition, Vietnamese exports continued to boom in the period following admittance to the WTO in 2007. Although export growth witnessed a drop in 2009 due to the global crisis, there are clear signs of quick recovery in the following years.

To measure the openness of an economy, the exports over GDP and exports per person ratios are popular indices measuring the integration of the economy. First, the export-GDP ratio increased significantly from 46.46% in 2000 to 71.09% in 2010. Similarly, the export per person ratio also evidenced the same trend. The number was US$186.56 per person in 2000, rising to US$830.95 per person in 2010. These indices suggest, on the one hand, that the degree of integration of the Vietnamese economy is increasing and on the other, that the economy may be readily vulnerable to external shocks.

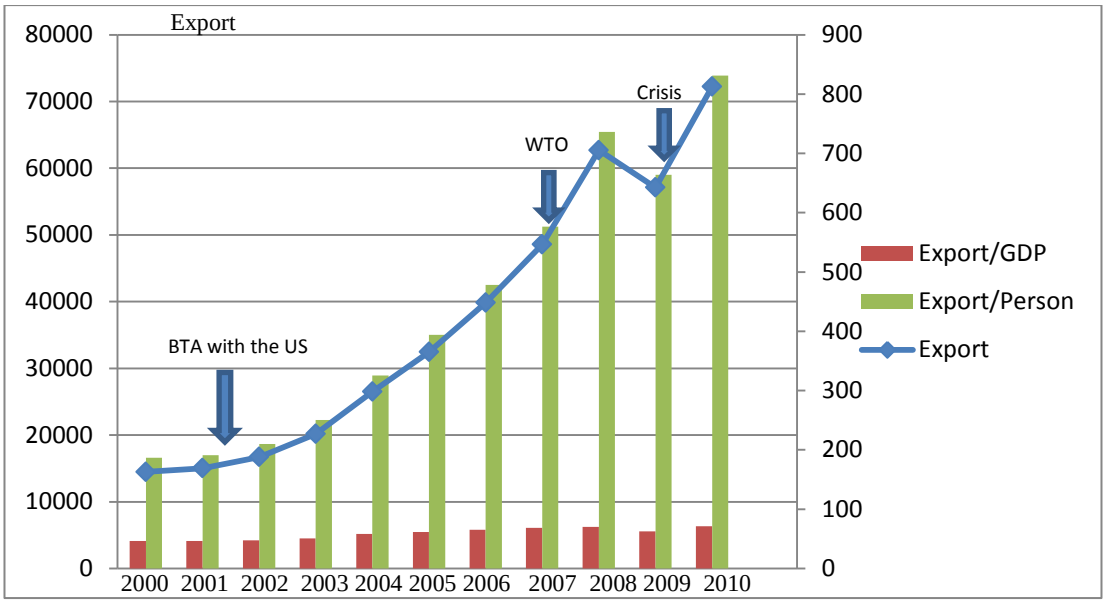

Figure 2.1: Export, export per person ratio and export-GDP ratio.
Source: Statistical Yearbook (various issues) from the Vietnamese General Statistical Office.

As shown in Table 2.1, the domestic economic sector's share of Vietnamese exports decreased significantly from 73% in 1995 to less than 50% in 2010. In contrast to this trend, the foreign sector's share of exports doubled in the same period. Furthermore, Table 2.1 shows that there was a significant improvement in export composition by commodity group. Shifts away from agricultural products to labour-intensive light manufacturing industries can be observed in Table 2.1. More specifically, while the share of agricultural product exports decreased from 32% to 14.7%, the export pattern showed an increase of goods in light industrial and handicraft industries from 28.4% to nearly 50%.

Table 2.1: The export of goods by economic sector types and commodity group

Year / Classification	1995	2000	2005	2010
By economic sector				
Domestic economic sector	73.0	53.0	42.8	45.8
Foreign invested sector	27.0	47.0	57.2	54.2
By commodity group				
Heavy industrial products and minerals	25.3	37.2	36.1	31.0
Light industrial and handicraft goods	28.4	33.9	41.0	46.1
Agricultural products	32.0	17.7	13.7	14.7
Forest products	2.8	1.1	0.8	1.1
Aquatic products	11.4	10.1	8.4	7.0
Total	100	100	100	100

Source: Statistical Yearbook (various issues) of the Vietnamese General Statistical Office.

Using the SITC classification of United Nations, as displayed in Table 2.2, the structure of exports has improved significantly in comparison with the previous period. For example, primary products accounted for nearly 70% of exports in 1995, while the share of goods from the manufacturing sectors was over 30%. After 15 years, however, the picture is completely different. The export share of manufactured goods totalled over 60% in 2010, while primary goods fell by nearly one half and accounted for 34% in total export value at the same time.

Taking a closer look, a striking feature in manufacturing export patterns can be observed by focusing on labour-intensive manufactured goods. These are classified under Section 8 on the SITC and include apparel, footwear, clothing accessories and furniture. Similarly, the share of manufactured and transport equipment as classified under Section 7 on the SITC also witnessed a significant

increase from 1.64% to nearly 16% in 2010. In this product group, office machinery, semi-conductors, telecommunications and recording equipment show the most significant growth (Athukorala, 2009).

Table 2.2: Composition of export commodities according to SITC classification

Description \ Year		1995	2000	2005	2010
Primary Products	SITC	67.24	55.78	49.62	34.87
Food and live animals	0	37.88	26.1	19.56	18.59
Beverages and tobacco	1	0.09	0.13	0.46	0.42
Crude materials, inedible, except fuels	2	6.8	2.65	3.79	4.67
Mineral fuels, lubricants	3	22.22	26.41	25.76	11.05
Animal and vegetable oils and fats	4	0.25	0.49	0.05	0.14
Manufactured Products		32.75	44.17	50.36	65.08
Chemicals and related products	5	0.57	1.09	1.65	2.60
Manufactured goods (classified by material)	6	6.42	6.29	6.67	11.75
Machinery and transport equipment	7	1.64	8.811	9.69	15.89
Miscellaneous manufactured articles	8	24.13	27.98	32.34	34.84
Other commodities and transactions	9	0.00	0.04	0.02	0.05
Total		100	100	100	100

Source: Author's calculation from material from the Vietnamese General Statistical Office, *Statistical Yearbook* (various issues).

With regard to export destinations, before the reform period, the majority of Vietnam's exports went to member countries of the Council for Mutual Economic Assistance (CEMA) (Athukorala, 2009). Since the reform period, Vietnam has established trade relations with many countries and territories. Table 2.3 displays the export destination of Vietnamese goods to various countries and

country groups. Exports to ASEAN countries remained unchanged through much of the 1995-2005 period. Although the share of goods exported to ASEAN countries has shown a decreasing trend recently, it still represented nearly a fifth of total exports.

APEC countries absorbed the majority of goods exported from Vietnam. For example, exports of Vietnamese goods to the US market increased significantly from over 3% in 1995 to nearly 20% in 2010. As explained previously, this is the result of the VN-US BTA, effective since 2001. In addition, besides China, Japan still remains one of the largest importers of Vietnamese products in East Asia in spite of a decreasing tendency in recent times. The entry recording goods exported to Russia (one of Vietnam's main partners in the former Soviet Union) proves to be the most modest. The case is similar for countries in OPEC. However, countries in the EU zone remain large importers of Vietnamese products. Despite a decreasing trend in the research period, the export percentage of Vietnamese goods to this market has ranged from 16% to nearly 20% since 2000.

Table 2.3: Export destination of Vietnamese goods

Country/ country group	Composition (%)			
	1995	2000	2005	2010
ASEAN	**18.29**	**18.08**	**17.7**	**14.35**
Cambodia	1.74	0.98	1.71	2.16
Indonesia	0.99	1.72	1.44	1.98
Laos	0.38	0.49	0.21	0.27
Malaysia	2.03	2.86	3.17	2.89
Philippines	0.76	3.3	2.55	2.36
Singapore	12.66	6.12	5.91	2.94
Thailand	1.86	2.57	2.66	1.64
EU	**12.19**	**19.64**	**17.0**	**15.76**
United Kingdom	1.37	3.31	3.13	2.33
Germany	4.0	5.04	3.34	3.28
France	3.1	2.62	2.01	1.52
APEC	**73.38**	**69.72**	**74.49**	**68.32**
USA	3.11	5.06	18.25	19.71
Russia	1.48	0.85	0.77	1.15
Japan	26.81	17.78	13.37	10.69
China	6.64	10.61	9.95	10.72
Australia	1.02	8.78	8.39	3.74
Canada	0.33	0.68	1.09	1.11
Republic of Korea	4.32	2.43	2.04	4.28
OPEC	**2.42**	**4.44**	**2.7**	**1.82**
Iraq	0.65	2.22	0.31	0.26
Saudi Arabia	0.10	0.10	0.09	0.19
Iran	0.04	0.09	0.25	0.06

Source: Author's calculation from material from the Vietnamese General Statistical Office, *Statistical Yearbook* (various issues).

2.3 The development of non-state SMEs in Vietnam

2.3.1 The development of the non-state sector

During the pre-reform period, Vietnam implemented a centrally planned economy where the government determined all economic activities, including the allocation of inputs and distribution of outputs. SOEs and collectives were the two dominant ownership types in the economy, creating the majority of goods for the society. As documented by Le (2010), some popular forms of private ownership, such as household enterprises and family businesses, still existed. However, the existence of private and individual ownership was considered illegal due to the

ideology that private ownership was the source of capitalism and “the enemy” of socialism.

In the post-reform period, the development of the private sector was divided into two stages. Before 2000, a series of legal decrees including the Land Law (1988), the Company Law (1991a), the Private Company Law, the Law of Bankruptcy (1994), and the Law on Private Enterprises were issued to set up a legal framework for the operation of non-state sectors. On the basis of the newly introduced legal framework, the non-state sector was recognized officially. However, it was observed that the development of the private sector was disappointing (Hakkala and Kokko, 2007) because it had to face various obstacles such as institutional weakness, shortage of capital, limited access to markets, technical and management limitations and unfavourable attitudes (Le, 2010). In addition, registration procedures were too complicated and costly with the process taking many months, involving massive documentation, and remaining dependent on discretionary decisions whether to permit the establishment of the firm (Hakkala and Kokko, 2007).

Since 2000, when the Enterprise Law was enacted, the private sector has witnessed strong development. There were two major breakthroughs in Enterprise Law. First, the simplification of procedures and documentation for enterprises reduced the time to register a business from 90 days to 7 days or less with online registration. In addition, instead of being buried in massive documentation as before, the rights of the state, state officials and investors as well as enterprises were clearly defined. Second, the right of freedom to do business was confirmed. According to the law, “citizens are free to do business in all business areas not

prohibited by law." In fact, the promulgation of this law revitalized the trust of investors and entrepreneurs. Accordingly, the number of registered enterprises has increased considerably.

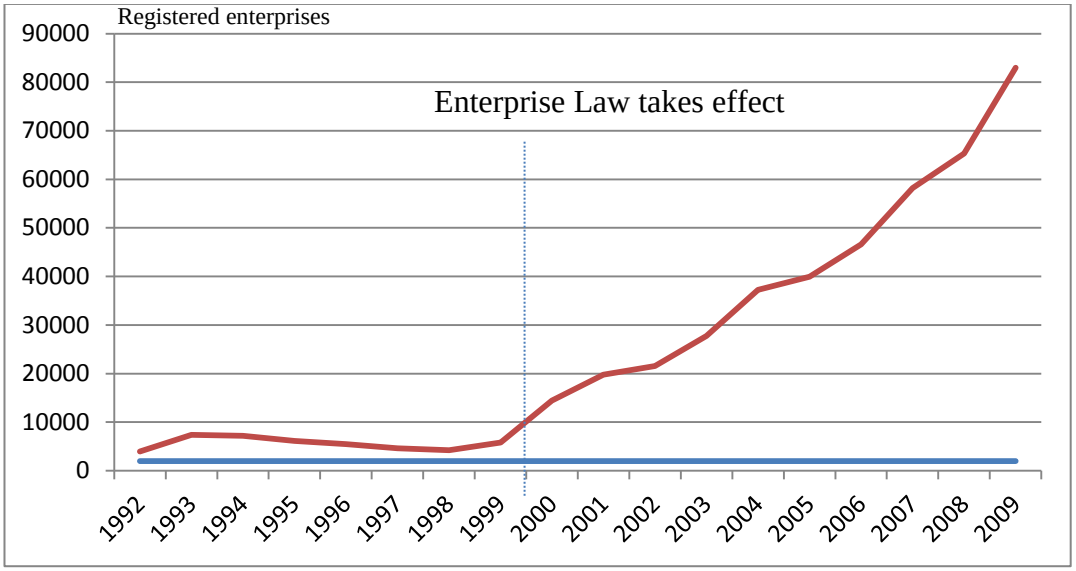

Figure 2.2: The number of registered enterprises from 1992-2009. Source: National Business Information Centre, Agency for SME Development, MPI, 2009.

The Enterprise Law of 2000, however, applied only to domestic private enterprises. Stated-owned enterprises were still subject to the laws governing state-owned enterprises, while foreign enterprises operated under the law of foreign direct investment. Since 2005, further improvement was observed with the implementation of the Unified Enterprise Law which had the purpose of creating a "level playing field." From that time, all enterprises, regardless of type of ownership, operate under this law.

2.3.2 Vietnamese SMEs in the economy

2.3.2.1 The definition of SMEs

Each country has a different understanding of SMEs. The Table below (Table 2.4) summarizes some selected definitions of SMEs in ASEAN countries. It also gives other definitions of SMEs from the European Union, United Nations Development Programme and World Bank.

Obviously, there is no universal definition of SMEs among countries. Consequently, it is necessary to give a specific definition of SMEs in the Vietnamese context. Vietnam has had various definitions of SMEs at different periods. The first official definition of SMEs was contained in Decree No. 90/2001/ND-CP issued on 23 November, 2001. Enterprises had to satisfy one of two criteria in order to be classified as SMEs. They had to have registered capital of less than VND 10 billion or annual labour not greater than 300 people.[9] Although the criteria in this definition are clear and consistent with those of the World Bank, the definition does not clarify the diversification of SMEs by size or business sector.

[9] US$1 equalled approximately 15,084 VND in 2001.

Table 2.4: Definition and criteria for SMEs in different countries

Location	Definition and criteria for SMEs
Malaysia	*a. Manufacturing sectors:* Micro enterprises: <5 employees or <RM 250,000 Small enterprises: 5-50 employees or RM 250,000- RM 10 million. Medium enterprises: 51-150 employees or RM 10-25 million b. *Services sectors:* Micro enterprises: <5 employees or <RM 200,000 Small enterprises: 5-19 employees or RM 20,000- RM 10 million. Medium enterprises: 20-50 employees or RM 1-RM 5 million
Indonesia	Fewer than 100 employees
Singapore	< 200 employees or annual sales turnover < S$100 million
Thailand	*a. Manufacturing and Services sectors:* Small enterprises: ≤50 employees or capital ≤ B 50 million. Medium enterprises: 51-200 employees or capital over B 50 million and ≤ B 200 million *b. Wholesale sectors:* Small enterprises: ≤25 employees or capital ≤ B 50 million; Medium enterprises: 26-50 employees or capital over B 50 and ≤ THB 100 million. *c. Retail sectors:* Small enterprises: ≤15 employees or capital ≤B 30 million B; Medium enterprises: 16-30 employees or capital over B 30 and ≤B 60 million.
World Bank	≤300 employees; turnover ≤$ 15 million; assets ≤$ 15 million.
United Nations Development Programme	≤ 200 employees
European Union	Medium enterprises: <250 employees, annual turnover ≤EUR 50 million, or annual balance-sheet total ≤EUR 43 million Small enterprises: <50 employees, annual turnover and/or annual balance-sheet total ≤EUR 10 million Micro enterprises: <10 employees, annual turnover and/or an annual balance-sheet total ≤EUR 2 million

Sources: Abe, Troilo, Juneja, and Narain (2012).

A more recent definition providing more detailed and precise information than the previous one was introduced by the government under Decree No. 56/2009/ND-CP on 30 June 2009 dealing with support for the development of SMEs. The criterion of registered capital was replaced by that of total capital. As shown in Table 2.5, SMEs are divided into micro, small and medium enterprises based on the number of employees according to various industries.

Table 2.5: The recent definition of small and medium enterprises in Vietnam

Size / Sector	Micro Enterprises	Small Enterprises		Medium Enterprises	
	Number of employees	Total capital [10]	Number of employees	Total capital	Number of employees
Agriculture, forestry and fishery	<10 persons	< 20 billion VND	10-200 persons	20-100 billion VND	200-300 persons
Industry and construction	<10 persons	< 20 billion VND	10-200 persons	20-100 billion VND	200-300 persons
Services	<10 persons	< 10 billion VND	10-50 persons	10-50 billion VND	50-100 persons

Source: Government Decree No. 56/2009/ND-CP[11].

2.3.2.2 Evolution of Vietnamese SMEs

Based on the above definitions of Vietnamese SMEs, the majority of firms in Vietnam are SMEs, regardless of the criteria, whether labour or capital. First, Table 2.6 classified firms based on the number of employees. As revealed in row

[10] US$1 equalled approximately 17,941 VND in 2009.

[11] For more detail, see http://www.economica.vn/Portals/0/MauBieu/eedeb5241be5a5e74eb1bda4f7906563.pdf

1, Table 2.6, the trend was for an increase in the number of SMEs through the research period. The average growth rate under this classification increased from 23% in 2001 to 33% in 2008. A detailed look at each kind of firm according to size indicates that micro and small firms dominate the SME population.

Table 2.6: The distribution of SMEs (by employees)

Year / Distribution	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total number of firms (including SMEs)	42288	51680	62908	72012	91756	112950	131318	155771	205689
SMEs (percentage in total)	92%	93%	93%	94%	95%	96%	96%	96%	97%
Average growth rate of SMEs		23%	22%	15%	29%	24%	17%	19%	33%
Micro enterprises	54%	54%	53%	51%	53%	56%	61%	61%	62%
Small enterprises	34%	35%	37%	39%	38%	37%	32%	33%	33%
Medium enterprises	4%	4%	4%	3%	3%	3%	3%	3%	2%

Sources: Anh, Mai, Nhat, and Chuc (2011), (calculations based on Enterprise Census 2001-09).

Table 2.7 classifies SMEs under capital criteria. The majority of Vietnamese firms are SMEs, accounting for 97% of total firms for the period 2000-08. In terms of growth rate, a similar growing trend can also be observed in Table 2.7. The average growth rate was around 20% per year. In the last two rows, the number of SMEs is entered as either small or medium enterprises. The data also reflects the fact that small firms accounted for nearly 90% of total firms.

Table 2.7: The distribution of SMEs (by capital)

Year / Distribution	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total number of firms (including SMEs)	42288	51680	62908	72012	91756	112950	131318	155771	205689
SMEs (percentage of total)	97%	97%	97%	97%	97%	97%	97%	96%	96%
Average growth rate of SMEs		22%	22%	14%	28%	23%	16%	18%	32%
Small enterprises	88.8%	89.2%	89.0%	89.0%	89.3%	89.7%	89.6%	87.8%	86.4%
Medium enterprises	7.9%	7.6%	7.8%	7.8%	7.6%	7.4%	7.4%	8.6%	9.9%

Sources: Anh et al. (2011), (calculations based on Enterprise Census 2001-09)

As indicated in Table 2.8, the change in SMEs can be observed throughout the state, non-state and foreign owned sectors. The share of SMEs in the state sector accounted for a small percentage in comparison with non-state SMEs. The data show that 86.4% of all existing SMEs in Vietnam were not state-owned in 2000, and the number rises to nearly 97% in 2008. A strong increase in non-state ownership contrasts with a significant decrease in state-owned SMEs. The share of state-owned SMEs decreases due to privatization or equitisation. The last row of Table 2.8 indicates that the share of SMEs in foreign-owned firms (joint venture or 100% foreign-owned) is small, showing a slight decrease during this period.

Table 2.8: The distribution of SMEs by type of ownership

Year	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
State owned SMEs	10.5	7.6	6.1	4.6	3.4	2.4	1.9	1.5	1.1
Non-state SMEs	86.4	89.0	90.9	92.5	93.9	94.9	95.5	95.9	96.7
Foreign invested SMEs	3.0	3.4	3.0	2.9	2.7	2.6	2.6	2.5	2.2
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Sources: Anh et al. (2011), (calculations based on Enterprise Census 2001-09)

As shown in Table 2.9, trading, manufacturing and services comprise the largest share of SMEs. While SMEs operating in the fishing sector decreased significantly, more SMEs were engaged in the construction sector (from 8.89% in 2000 to 13.73% in 2008). In addition, the share of the manufacturing sector shows a decreasing trend, whereas a significant increase is observed in the services sector. Consequently, from 2005 the manufacturing sector lost its rank as second largest to the service industries. Although the trade sector experienced a decreasing trend, it still represented the largest share among the various sectors.

Table 2.9: The distribution of SMEs by sectors

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Agriculture and forestry	1.96	1.48	1.37	1.15	0.99	0.86	0.75	0.68	3.54
Fishing	6.14	5.21	4.01	2.13	1.53	1.24	1.02	0.85	0.67
Mining and quarrying	0.86	1.16	1.34	1.39	1.27	1.11	1.02	1.07	1.05
Manufacturing	22.93	22.38	21.97	21.84	20.90	19.98	19.24	18.80	17.78
Electricity, gas and water supply	0.25	0.27	0.28	0.34	1.64	2.18	1.98	1.83	1.53
Construction	8.89	10.54	12.02	13.22	13.23	13.39	13.48	13.46	13.73
Trade	43.48	41.81	41.08	41.03	40.67	40.66	41.00	40.41	40.17
Services	15.48	17.15	17.93	18.91	19.79	20.60	21.51	22.90	21.53
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Sources: Anh et al. (2011), (calculations based on Enterprise Census 2001-09)

2.3.2.3 Constraints and government support for SMEs in the economy

The reform process has recognised the role of the private sector and many attempts have been made to create a fair and equal business environment for all economic sectors. According to Harvie and Lee (2008), the development of Vietnamese SMEs has been impeded by some major factors. Lack of land as well as uneven access to rented land by SMEs is one major obstacle. As indicated by Chuc (2011), SMEs may gain access to land by leasing it from the government or

by buying land-use rights through land transfers or by renting from industrial zones. However, it is difficult to lease land from the Government because of high corruption (Chuc, 2011). In addition, the high demand from SMEs goes beyond the ability of industrial zones to meet it and this makes rent in industrial zones too high for SMEs to afford (Ministry of Planning and Investment, 2006). In addition, since SOEs have been developed for longer than SMEs, land in good locations is occupied by SOEs. Other evidence shows that while SOEs do not use all their premises, non-state SMEs suffer from a serious lack of space for developing their business activities (Bich, 2008).

Second, according to surveys of SMEs by Danida in various years, the majority of private SMEs face a lack of capital (e.g., Cuong et al., 2008; Rand, 2007). The low accessibility to bank credit stems from the unwillingness of banks to lend to the private sector due to difficulties in providing collateral, demonstrating business experience, as well as satisfying other lending requirements. In addition, the preference of banks for SOEs, sometimes after prompting by administrative suggestions from authorities, also limits loans for the private sector. Another reason derives from the lack of transparency in the financial status reports of non-state SMEs (Bich, 2008).

Third, the shortage of skilled labour and the continued use of obsolete technology are further obstacles to greater development for SMEs. The majority of the SME labour force has a low level of training. As explained by Kokko and Sjöholm (2005), few firms seem to consider investment in human capital although their labour force lacks knowledge and expertise. For example, a recent survey shows that about 50% of medium-sized enterprises have difficulty in recruiting

labour that meets their standards (Cuong et al., 2010). In the area of technology, as indicated by Harvie and Lee (2008), the technology used by the majority of Vietnamese SMEs lags three or four generations behind the average international level.

Finally, most Vietnamese SMEs are small or very small in size as described above. Moreover, SMEs lack information because of the low quality of business development services offered by the government. Hence, access to the market, especially the international market, exceeds the capability of most SMEs due to the considerable cost of penetrating the export market. Few private firms engage in direct exporting (Kokko and Sjöholm, 2005).

Recognizing that SMEs are a critical engine for Vietnamese economic growth, the government of Vietnam has set up supporting agencies, issued various decrees and called for international donors to support SME programs. First, as stipulated by Decree No. 90/2001/ND-CP, the Agency for SME Development (ASMED) was established within the Ministry of Planning and Investment (MPI) to enforce the implementation of the relevant decrees.[12] Support also comes from other ministries. For example, a trade promotion agency was established by the Ministry of Industry and Trade to support SME access to foreign markets by providing consultation and information. Furthermore, three technical assistance centres under ASMED have been established in Hanoi, Ho Chi Minh and Da Nang to provide services to SMEs. Support for SMEs is also received from many business associations such as VCCI, Young enterprises, and the Rural SME Association.

[12] For more detail, see http://www.unido.org/fileadmin/import/40748_DecreeSME2001.pdf

Second, the development of SMEs is supported by international donors. For example, as documented by Thai (2008), the MPI and German Technical Cooperation, officially known as GmbH, launched an 8-year SME development program with a multi-million euro commitment in May 2005. This support program focused on improving the business environment for private sector development and enhancing the position of SMEs in the market.

As another example, the United Nations Industrial Development Organization (UNIDO) has committed over US$4 billion of its integrated program to support SMEs by providing assistance in establishing a national and provincial SME support infrastructure. They also aim to strengthen the standardization, metrology, testing and quality of institutional service capability to promote the long-term growth and sustainability of the SME sector. Furthermore, other international organizations such as ILO, UNIDO, and DANIDA have helped to set up training programs such as in business start-up and management.

Third, reflecting support policies for SMEs, Table 2.10 lists a series of policy measures including financial access, human resource development, technical support and trade and export promotion. Although these policies cover all the various aspects of support for SMEs, difficulties in the implementation of these policies still exist because of unclear and unrealistic requirements (Le, 2010). For example, a recent decree (56/2009/ND-CP) lists types of support that SMEs can receive from the government. In practice, however, the guidelines are not clear or sufficiently detailed (Anh et al., 2011). Consequently, it takes much time and effort for SMEs to receive the support offered. In addition, although the

leading role of the state sector has been removed**,** discrimination against non-state SMEs still exists.

Table 2.10: Support policies for SMEs

2001
Decree No. 90/2001/ND-CP issued on 23 November 2001 by the government concerning support for the development of SMEs. Decision No. 193/2001/QD/-TTg issued on 20 December 2001 by the Prime Minister on the promulgation of status for the establishment and operation of credit guarantees for SMEs.
2002
Circular No. 86/2002/TT-BTC issued on 27 September 2002 by the Ministry of Finance on guiding the utilisation of the budget in support of trade and export promotion activities.
2003
Decision No. 12/2003/ QD-TTg issued on 17 January 2003 by the Prime Minister on the functions, responsibility and membership of the Small and Medium Enterprises Development Promotion Council. Decision No. 104/203/QD-BTM issued on 24 January 2003 by the Ministry of Trade on promulgating the regulations for the formulation and management of national key trade promotion programs. Decision No. 185 QD-BKH issued on 24 March 2003 by the Chairman of the Small and Medium Enterprises Development Promotion Council on the promulgation of the operational statute for the Small and Medium Enterprises Development Promotion Council. Decision No. 290/QD-BKH issued on 29 July 2003 by the Ministry of Planning and Investment on the establishment of technical assistance centres for SMEs in Hanoi, Da Nang and Ho Chi Minh city. Decision No. 504/QD-BKH issued on 29 July 2003 by the Ministry of Planning and Investment on the functions, responsibility and organisational structure of the Agency for the Development of Small and Medium Enterprises. Directive No. 27/2003/CT-TTg issued on 11 December 2003 by the Prime Minister on continuing to step up the implementation of the enterprise law and encouraging SME development.
2004
Decision No. 115/2004/QD-TTg issued on 25 June 2004 by the Prime Minister on revision and amendment to the statute for the establishment, organisation, and operation of the credit guarantee fund for SMEs promulgated in decision No. 193/2001/QD-TTg issued on 20 December 2001 by the Prime Minister.

Decision No. 143/2004/QD-TTg issued on 10 August by the Prime Minister on approval for the Human Resources Development Assistance Program for SMEs. Circular No. 93/2004/TT-BTC issued on 29 September 2004 by the Ministry of Finance. Circular on regulations for the Credit Guarantee Fund for SMEs. Guidelines of the Ministry of Planning and Investment for implementation of the SME Human Resource Development Program, 24 November 2004.
2005
Resolution No. 144/2005/TB-BKH issued on 07 October 2005 by the SME Council on the SME Development Plan 2006-2010.
Directive No. 40/2005/CT-TTg issued on 16 December 2005 by the Prime Minister on the enhancement of support for the development of SMEs.
2006
Circular No. 01/2006 issued on 20 February 2006 by the State Bank of Vietnam on capital contribution to credit guarantee funds for SMEs.
Decision No. 236/2006/QD-TTg issued on 23 October 2006 by the Prime Minister on approval of the SME Development Plan 2006-2010.
Decision 48/2006/QD-BTC issued on 14 September 2006 by the Ministry of Finance on the new accounting system for SMEs.
2007
Directive No. 22/2007/CT-TTg issued on 26 October 2007 by the Prime Minister on the development of non-state enterprises.
2009
Decree No. 90/2001/ND-CP on support for the development of SMEs was replaced by Decree No. 56/2009/NĐ-CP issued on 30 June 2009 by the government.

Source: Agency for Small and Medium Enterprise development, MPI as cited in Le (2010).

Finally, master plans for the development of SMEs have been drawn up. For example, the MPI has completed its 2006-10 national SME development policy as part of Vietnam's 5-year socio-economic development plan. In addition, Decision No. 1231/2012/QD-TTg issued on 07 September 2012 by the Prime Minister concerning approval of the development plan for SMEs 2011-15, shows strong commitment and willingness on the part of the government to support and develop SMEs.

2.4 Summary

The Vietnamese economy has experienced a major transformation from a centrally planned to a market-oriented economy. Trade reforms are among the targets of the reform process. Some reforms in trade policies have been overviewed. For example, trading rights are recognised for all economic sectors at present. Trade liberalisation has increased through the integration process. Vietnam participates in many bilateral agreements and international organizations.

Import protection and export promotion policies are additional packages in the trade liberalisation process. The protection of domestic production has been gradually removed by the extensive international integration of the Vietnamese economy. On the basis of trade reforms, Vietnam's export performance has witnessed significant growth. The national economy has become much more open and integrated with the world economy. In a positive trend, export patterns have also improved. A shift away from primary products towards labour-intensive manufactured goods has been observed during this process. Reflecting another aspect of the reform process, non-state sectors have in fact moved out of the "grey zone" to occupying a legally recognised position since the 2000 Enterprise Law and the Unified Enterprise Law issued in 2005.

CHAPTER THREE: HIGHER PRODUCTIVITY AMONG EXPORTERS: SELF-SELECTION, LEARNING BY EXPORTING, OR BOTH

3.1 Introduction

Since the ground-breaking study of Bernard and Jensen (1995), which described "exceptional export performance," many subsequent empirical studies have focused on investigating the relationship between export status and productivity growth. Two hypotheses are often used to explain the superiority in productivity of exporters compared to non-exporters in international trade. The first hypothesis is self-selection, where only the more productive firms will self-select into the export market. An alternative but not mutually exclusive explanation is learning by exporting, which argues that export participation can be a source of productivity growth and that exporting makes firms become more productive than non-exporters.

Drawing on econometric evidence, mixed findings are among the typical characteristics of the linkage between exporting and productivity. For example, while many studies support the self-selection hypothesis, other research indicates that participation in the export market makes firms more productive (for a review, see Wagner, 2007). In contrast to such findings, recent studies, for example Bigsten and Gebreeyesus (2009), found support for both hypotheses in Ethiopia, while Sharma and Mishra (2011) and Gopinath and Kim (2009) rejected the validity of both hypotheses in the majority of sectors in India and South Korea respectively.

Mixed results on the export and productivity growth nexus may stem from the varying characteristics of geographical and economic conditions and the level

of a country's economic development (Blalock and Gertler, 2004; Wagner, 2007). Obviously, marginal benefits from exposure to exporting can be greater for countries with poor technology and low productivity in comparison with those in developed countries. More importantly, different conclusions may result from using a wide variety of econometric methodologies for testing these two hypotheses (Sharma and Mishra, 2011).

Interestingly, when considering the relationship between export participation and productivity, there is no consistent measurement of productivity. Some previous studies often use labour productivity to stand for overall productivity. This is unsuitable in the Vietnamese context because this index represents only part of the picture of productivity and should be considered only one of the characteristics of manufacturing export firms (Hiep and Ohta, 2009). Other studies often use a methodology developed by Levinsohn and Petrin to measure total factor productivity (TFP) in the relationship being investigated. Although the method can control for the endogeneity of input factors by using the intermediate input demand function under certain assumptions, it does not allow for the decomposition of TFP growth. Productivity theory shows that the change in TFP includes various components such as technical progress change, efficiency change and scale efficiency change (Kumbhakar and Lovell, 2003). In consequence, when productivity is considered as an aggregated index, this will limit further investigation into the relationship between export participation and its decomposition.

In order to examine the relationship between exporting and productivity, several studies employ a conventional approach such as the Solow residual

method. This approach is based on the classical assumption that all firms are operating effectively and have a constant return to scale, which means that TFP growth occurs and is equal to technical change (Kumbhakar and Lovell, 2003). The present study revisits hypotheses of self-selection and learning by exporting in order to examine their validity in the context of Vietnamese private domestic manufacturing firms for the period 2005-2009. During this time, Vietnam became a member of the World Trade Organization and increasingly affirmed the private sector's freedom to participate fully in export activities.[13] For Vietnamese private manufacturing firms, the assumption of the full efficiency of firms cannot be seen to be working. As described by Kokko and Sjoholm (2000) and Anh, Hong, Thang, and Hai (2006), Vietnam has a transitional economy where institutional discrimination between state enterprises and local private firms still exists due to the consequences of previous planning mechanisms. Such discrimination can render local private firms unable to work at desired efficiency levels.

The above issues raise the question whether the measurement of productivity can offer an alternative explanation for mixed results in the relationship between productivity and export. Our research uses a Stochastic Frontier Production Function (SFPF) approach to relax the assumption of the full efficiency of firms and decompose productivity growth into different components including technical change, scale change and technological progress change. While other approaches (e.g. Data Envelopment Analysis (DEA)) may divide productivity growth, the SFPF has been employed because of the control

[13] In 1998, Vietnam dismantled the export license regime and in 2000 introduced an enterprise law that admitted the private sector as a source of economic growth (for more detail, see Chapter 2).

advantages gained, given the random shocks, outliers and measurement errors in the data (Coelli, 2005; Sharma, Sylwester, and Margono, 2007).

By using the SFPF approach, this research aims to contribute to the literature of heterogeneous firm trade theories in several ways. To the best of my knowledge, it is the first investigation to consider the impact of export participation on each component of TFP. It is worth decomposing TFP because this procedure can provide a detailed picture of the impact of firm exporting on productivity. In addition, when considering the role of productivity in export participation of non-state manufacturing SMEs, other impediments (e.g., firm size, credit constraints, innovative activities, government support and location of firms) are also controlled for. Hence, the results from this chapter provide additional insights into factors motivating SMEs to participate in export markets.

The structure of the chapter includes four sections. Section 3.2 reviews briefly the literature on export and productivity. Section 3.3 discusses the data source, the methodology for TFP measurement, and econometric models for considering the relationship between export and productivity. The empirical results are displayed in section 3.4. A summary of findings and policy implications is presented in the last section.

3.2 Literature review

A common feature reported in the literature is that exporters are more productive than non-exporters. The starting point for explaining this feature is the self-selection hypothesis. Enterprises will participate in the export market only if they have a sufficiently high productivity level to overcome market entry costs such as market research, product modification and transportation costs.

To date, there have been numerous empirical studies using datasets from different countries to test the hypothesis. A pioneering effort to examine the relationship between productivity and export status at firm level was a series of studies that utilized US data (Bernard and Jensen, 1995, 1999, 2004a, 2004b). Bernard and Jensen's empirical results failed to find evidence supporting an increase in productivity after entry into the export market.

For example, Bernard and Jensen (1999) revealed that higher firm productivity occurs before entry into the export market. They found that productivity gains were the result of self-selection rather than learning by exporting. Another important early contribution, Clerides, Lach and Tybout (1998), used a dataset that included Mexico, Columbia, and Morocco, and also indicated that firms with greater productivity are more likely to "self-select" to become exporters. Their findings were replicated across many countries, including highly industrialized countries, Germany (Bernard and Wagner, 2001; Bernard and Wagner, 1997), the UK (Girma, Greenaway, and Kneller, 2004), Latin American countries, e.g., Columbia (Roberts and Tybout, 1997), Asian countries, e.g., Taiwan (Liu, Tsou, and Hammitt, 1999), South Korea and Taiwan together (Aw, Chung, and Roberts, 2000), China (Kraay, 1999), and also transitional

economies, e.g., Estonia (Sinani and Hobdari, 2010). A meta-study by the International Group on Exports and Productivity using data from 14 countries also showed that exporter productivity premiums stem from the self-selection mechanism and do not accord with the learning by exporting hypothesis (International Study Group on Exports and Productivity, 2008).

By contrast, others have argued that the higher productivity of exporters compared with non-exporters can be attributed to the benefits of export activities. A positive effect of exporting on productivity growth is witnessed in both developed and developing countries. For example, Baldwin and Gu (2003) investigated firm level data from Canada and provided evidence of the positive effect of exporting on productivity growth. Specifically, Canadian exporters in manufacturing industries experienced greater productivity growth after exporting than their non-exporting counterparts.

Similarly, using a panel dataset from English manufacturing plants with detailed information of learning sources from export clients, Crespi, Criscuolo, and Haskel (2008) tested directly the relationship between export and productivity growth and found strong evidence that productivity improvements are a result of learning from exporting rather than self-selection. Evidence for the positive effects of export participation on productivity growth is also observed in the United Kingdom (Girma, Greenaway, and Kneller, 2003; Greenaway and Kneller, 2007), France (Bellone, Musso, Nesta, and Quere, 2008) and Slovenia (De Loecker, 2012).

As in developed countries, the effect of learning by exporting is emerging in the developing countries. Blalock and Gertler (2004) used panel data on

Indonesian manufacturing firms to examine the impact of exporter status on productivity. Their empirical results indicate strongly that export activities in the foreign market make a significant and direct contribution, adding between 2% and 5% to the productivity of Indonesian firms. They found that such gains in productivity came after firms began getting involved in export activities. Similar findings were also reported by Van Biesebroeck (2005), who looked at manufacturing plants in nine African countries. The author suggests that exporters gain higher productivity after participating in the export market. In addition, a robust check on results is maintained when endogenous export participation is controlled for. Other studies (e.g., China (Kraay (1999), Park et al., (2010), and Sun and Hong (2011)) also claim that exporters benefit from an increase in productivity after entering into the export market. In addition, Bigsten et al., (2004) also show similar results for Sub-Saharan African countries.

Contrary to the above results, some studies reached conclusions in favour of both hypotheses. For example, in a study of Chile by Alvarez and López (2005), a firm-level panel dataset was used to consider the relationship between export participation and productivity growth and indicated that improvements in productivity not only result from learning by exporting but also come from the self-selection of better firms for participation in export markets. Other studies using firm-level panel data sets (Kimura and Kiyota (2006) for Japan, Greenaway and Yu (2004) for England, and Bigsten and Gebreeyesus (2009) for Ethiopia), confirmed the importance of both self-selection and learning by exporting.

Other important research came to the opposite conclusion. Greenaway, Gullstrand and Kneller (2005) researching Swedish manufacturing firms failed to

find any evidence for either hypothesis**.** More recently, in a study of the relationship between export status and productivity growth, Sharma and Mishra (2011) found no supporting evidence for the two hypotheses. Their results indicate that in Indian firms there is little evidence of learning effects or self-selection associated with export activities.

It should be noted that when considering the relationship between exporting and productivity, the majority of the aforementioned research studies use labour productivity, or relied on the Solow residual method or Levinsohn-Petrin methodology. These approaches do not allow the decomposition of TFP growth into its components. In a study in China, when considering the relationship between export status and productivity growth in different industries from 1990-1997, Fu (2005) contributed to the literature by using DEA to compute and decompose productivity growth into technical efficiency and technical progress. After the decomposition, she used a random effects panel data model to test the impact of export status on productivity growth and its components. The results from this study reveal that export activity generates a statistically insignificant effect on TFP growth and its components. However, a limitation of this paper is that it does not consider the contribution of firm exporting on scale efficiency.

Furthermore, Kim et al. (2009) use DEA methodology to calculate TFP for a panel dataset of South Korean manufacturing firms. In their studies they argued that the effects of self-selection and learning by exporting might not occur in all types of industry. They discovered that firms with a high productivity level which "self-select" for export participation could be found in just three out of eight

industries while only one of eight industries showed post-exporting productivity improvement.

In the case of Vietnam, there are a few prominent studies on firm exports and productivity. The first research was conducted by Hiep and Ohta (2009), who used data from a sample survey, including 1150 private enterprises, and surveys from some provinces. Their study results showed that export participation improves the productivity growth of firms but productivity has an insignificant effect on export participation. However, their study results were based on data surveyed retrospectively and this raises questions about data measurement errors.

Another study by Trung et al. (2009) was based on cross-sectional data and a static model that only focused on examining observable characteristics. Consequently, their results failed to control for unobservable factors that might affect the linkage between exporting and productivity growth.

To sum up, to this point there have been many empirical results reflecting the linkage between exporting and productivity but evidence of a nexus is mixed. The issue, it would seem, is very much at the formative stage where no dominant explanation has prevailed, despite the many studies of the subject (Sharma and Mishra, 2011). Furthermore, when considering the relationship between export and productivity growth, most studies consider productivity from a narrow point of view that does not pay sufficient attention to the various components of productivity and the importance of their influence. In Vietnam, there are limited rigorous studies in this field.

3.3 Methodology and data

3.3.1 Empirical framework

3.3.1.1 Stochastic frontier and decomposition of productivity change

According to Kumbhakar and Lovell (2003) and Margono and Sharma (2006), productivity change is achieved by (1) change in technical progress (TP), (2) change in efficiency in using input factors (TE), (3) change in scale efficiency (SC). Change in technical progress is defined as the partial derivative of production function over time, whereas technical efficiency change is measured as the derivative of technical efficiency with respect to time (Kumbhakar and Lovell, 2003; Margono and Sharma, 2006). They also assert that the elasticity contribution to TFP growth is the change in scale efficiency.

In order to calculate TFP growth and its components, my research applied a methodology proposed by Kumbhakar and Love (2003), with a translog production function specification.[14] The panel model is expressed as follows:

$$\mathrm{Lny_{it}} = \widehat{\beta_0} + \widehat{\beta_1}\mathrm{lnK_{it}} + \widehat{\beta_2}\mathrm{lnL_{it}} + \widehat{\beta_3}\mathrm{t} + 0.5[\widehat{\beta_4}(\mathrm{lnK_{it}})^2 + \widehat{\beta_5}(\mathrm{lnL_{it}})^2 + \widehat{\beta_6}\mathrm{t}^2]$$

$$+ \widehat{\beta_7}\mathrm{lnK_{it}lnL_{it}} + \widehat{\beta_8}\mathrm{t\,lnK_{it}} + \widehat{\beta_9}\mathrm{tlnL_{it}} + \mathrm{v_{it}} - \mathrm{u_{it}} \qquad (1)$$

where y_{it} is value added that is assumed to be endogenous to the exogenous choice of two input factors L_{it} (labour) and K_{it} (capital), and t implies time trend. Two components v_{it} and u_{it} are unobservable error terms and are assumed

[14] The likelihood ratio (LR) is used to test the appropriate functional form specification. This index (LR) is calculated as the difference in the log-likelihood value between restricted and unrestricted functions. This result in Appendix 4 shows that the translog model is preferable to Cobb-Douglas.

independently of each other. While u_{it} represents technical inefficiency effects which are supposed to be non-negative, v_{it} reflects statistical noise (e.g., measurement error). According to Kumbhakar and Lovell (2003), an enterprise maximizes output with the inputs used if u_{it} is equal to zero. A firm is inefficient if u_{it} is greater than zero.[15]

As indicated by Kumbhakar and Lovell (2003) and Sharma et al. (2007), one can represent the productivity change and its components as follows:

Technological progress change: $\Delta TP_{it} = \frac{\partial \ln(y_{it})}{\partial t} = \widehat{\beta_3} + \widehat{\beta_6} t + \widehat{\beta_8} \ln K_{it} + \widehat{\beta_9} \ln L_{it}$ (2)

Technical efficiency change: $\Delta TE_{it} = -\frac{\partial u_{it}}{\partial t}$ (3)

Scale efficiency change: $\Delta SE_{it} = (\varepsilon - 1)\left[\left(\frac{\varepsilon_k}{\varepsilon}\right)\dot{K} + \left(\frac{\varepsilon_l}{\varepsilon}\right)\dot{L}\right]$ (4)

where: $\varepsilon_l = \frac{\partial \ln(y_{it})}{\partial \ln(L_{it})} = \widehat{\beta_1} + \widehat{\beta_4} \ln K_{it} + \widehat{\beta_7} \ln L_{it} + \widehat{\beta_8} t$

$$\varepsilon_k = \frac{\partial \ln(y_{it})}{\partial \ln(K_{it})} = \widehat{\beta_2} + \widehat{\beta_5} \ln L_{it} + \widehat{\beta_7} \ln L_{it} + \widehat{\beta_9} t$$

$\varepsilon = \varepsilon_l + \varepsilon_k$; $\dot{K}$ and $\dot{L}$ are the rate of change in capital and labour respectively.

Total factor productivity change: $\Delta TFP_{it} = \Delta TP_{it} + \Delta TE_{it} + \Delta SE_{it}$ (5)

In order to estimate the Translog production function in equation (1), the FRONTIER 4.1 software written by Coelli (2005) was employed. Then, using the estimated technical efficiency and coefficients, components of TFP growth were

[15] This study also conducts a hypothesis test to check if technical inefficiency is absent. The results in Appendix 4 confirm that inefficiency is found in the whole sample.

calculated by using equations (2), (3) and (4). The estimation regression results and hypothesis statistical tests are displayed in Appendices 3 and 4.

3.3.1.2 Model specification and estimation method of the self-selection effect

Since export participation is a binary variable with two possible outcomes (0-1), the framework for binary choice models (i.e., the Logit or Probit models) will be employed to quantify the impact of productivity on export participation. The Probit model is more appropriate than the Logit model because the cumulative probability distribution function of Probit is more asymptotic between zero and one than logit (Wooldridge, 2002).

Some previous studies employed a cross-sectional or pooled cross-sectional Probit model to consider the impact of covariates on export participation (e.g., Trung et al., 2009). However, the limitation of such a model is that it cannot evaluate the impact of unobserved factors such as product attributes, managerial skills, strategic management, marketing strategy, and business strategy. If these characteristics are not properly controlled for, the estimation results will be biased and inconsistent. Accordingly, the dynamic Probit model framework employed in this study is similar to the method of Roberts and Tybout (1997). In their model, firm i exports in period t if the expected gross revenue of the firm exceeds the current cost. In other words, a firm will export if the expected return from exporting is positive. Hence, the condition for export decisions is:

$$Y_{it} = \begin{cases} 1 \ if \ \ p_{it} q^{*}_{it-1} \ \geq c_{it}(X_t, Z_{it}, q^{*}_{it-1} / q^{*}_{it}) + S(1 - Y_{it-1}) \\ 0 \ \ otherwise \end{cases} \qquad (6)$$

where S indicates the sunk entry costs and varies across firms. P_{it} represents the price of goods sold abroad. C_{it} indicates the cost of producing optimal export quantity. X_t refers to vectors of exogenous factors affecting the firms' profitability. Z_t indicates vectors of firm-specific factors affecting the firms' profitability. Y_{it-1} represents the export status of firm i at time t-1.

Based on the probabilistic decision in equation (6), following Roberts and Tybout (1997) and Bernard and Jensen (2004a) for testing the self-selection hypothesis, a reduced binary-choice model can be outlined as follows:

$$Y_{it} = \begin{cases} 1 \ if \lambda_z X_{it} + \ \lambda_z Z_{it} - S(1 - Y_{it-1}) + u_{it} \geq 0 \\ 0 \quad otherwise \end{cases} \tag{7}$$

In order to estimate model (7), a "redpace" program written in Stata by Stewart (2006) was used. According to past studies, firms' export decisions are determined by a combination of multiple factors. First, productivity is considered as the main interest variable. Productivity with various measurement methods was used in the model to test the robustness of the results.

Second, standard firm characteristic variables such as firm age, firm size, and average wage were included in the majority of past studies (e.g., Aw, Roberts, and Winston, 2007; Roper, Love, and Hagon, 2006; Wagner, 2001).

Third, innovation is included in the model based on findings that the effects of innovative activities on export participation are positive and statistically significant (e.g., Alvarez and López, 2005; Huang, Zhang, Zhao, and Varum, 2008). Fourth, a dummy variable of having long-term trade relationships with

foreign partners was incorporated into the model since firms in social networks are found to be more likely to export than non-networking firms (Tomiura, 2007). Attention is also given to the relationship between the capital intensity and export participation of firms, based on evidence that the higher capital intensity a firm has, the more likely it is to participate in export activity (Ranjan and Raychaudhuri, 2011).

Furthermore, government supporting activities may have a connection with export probability and therefore the role of government support in a firm's decision to export is captured in the model by a dummy variable. Moreover, recent studies show that higher export probability has a close positive link with a firm's lower level of credit constraints (e.g., Minetti and Zhu, 2011). Hence, firm credit constraints are controlled for in the model as a dummy variable.

In addition to these variables, the geographical location of firms can have an effect on export participation. Consequently, following Hansen, Rand and Tarp (2009), ten provinces in the dataset were divided into two regions (urban and rural areas). In addition to these considerations, certain industry characteristics may have a variety of effects on the link between export participation and productivity growth (Greenaway and Kneller, 2007). Consequently, the different sectors in which enterprises operate were captured by a low technology sector dummy variable in comparison with medium and high technology sectors.

Table 3.1: Definition and measurement of variables in the model of export participation determinants

Variables	Definitions and measurement	Obs	Mean	Sd
Dependent Variables				
Exporter	1 if firm has export activities; 0 otherwise (dummy varible)	4992	0.052	0.223
Explanatory variables				
Levin & Petrin TFP	Total factor productivity predicted from Levinsohn-Petrin methodology (number)	4992	18.71	91.23
Stochastic frontier TFPc	Total factor productivity change calculated from Stochastic frontier methodology (ratio)	3328	0.156	0.118
LP	Labour Productivity calculated by value added per total employees (number)	4992	12.78	55.79
Firm size	Total employment (number)	4992	15.73	27.7
Capital intensity	The ratio of capital over total employment (ratio)	4992	59.68	131.94
Firm age	The number of years since established (number)	4992	14.0	10.7
Trade link	1 if firms have a long term relationship with foreign partners, 0 otherwise (dummy)	4992	0.03	0.171
Average real wage	Ratio of total wage to total employees (ratio)	4992	3.89	5.07
Innovation	1 if firms introduced new products, had major improvements in existing products, or introduced new production processes or technology, 0 otherwise (dummy variable)	4992	0.54	0.498
Credit constraint	1 if firms applied for a loan but failed to obtain the loan, 0 otherwise (dummy variable)	4992	0.078	0.26
Government support	1 if a firm receives investment incentives or loans, a human resource training programme, national key trade programme, quality and technology improvement programme, or other type of government assistance, 0 otherwise (dummy variable)	3328	0.282	0.45
Private ownership	1 if firms have private or limited liability ownerships, 0 otherwise (dummy variable)	4992	0.233	0.423
Partnership ownership	1 if firms have partnership or cooperative ownerships, 0 otherwise (dummy variable)	4992	0.03	0.171
Join-stock ownership	1 if firms have joint-stock ownerships, 0 otherwise (dummy variable)	4992	0.015	0.124
Urban dummy	1 if firm located in Hanoi, Haiphong or Ho Chi Minh, 0 otherwise (dummy variable)	4992	0.384	0.486

Finally, as indicated by previous studies (Bernard and Jensen, 2004b; Roberts and Tybout, 1997), past export status was employed in order to control

for the presence of sunk costs. In addition, many previous studies of determinants of export participation often lagged firm characteristics by one or more periods to reduce simultaneity (e.g., Hiep and Ohta, 2009; Roberts and Tybout, 1997). Accordingly, a series of one-period lagged explanatory covariates of firm characteristics was used in our regression.[16] Statistical descriptions and definitions of variables in the regression of export participation determinants are presented in Table 3.1.

3.3.1.3 Model specification of the role of export participation in productivity growth and its decomposition

Following Bernard and Jensen (1995; 1999), the standard specifications of empirical models considering the impact of export participation on productivity growth and its decomposition can be written as follows:

$$\Delta TFP_{it} = a_0 + a_1 Export_{it} + a_2 X_{1it} + u_{1it} \quad (8)$$

$$\Delta TP_{it} = b_0 + b_1 Export_{it} + b_2 X_{1it} + u_{1it} \quad (9)$$

$$\Delta TE_{it} = c_0 + c_1 Export_{it} + c_2 X_{1it} + u_{1it} \quad (10)$$

$$\Delta SE_{it} = d_0 + d_1 Export_{it} + d_2 X_{1it} + u_{1it} \quad (11)$$

where dependent variables are represented by total factor productivity change, change in technological progress, and change in technical efficiency and scale efficiency change. The main interest variable is the decision to export captured by a dummy variable for two reasons.

[16] This study used only one-period lagged firm characteristics variables because of the short period of time covered by the panel data.

First, as indicated by Stampini and Davis (2009), the use of a dummy variable makes it possible to consider the effect of average treatment and minimizes bias due to measurement errors. Second, export intensity data for 2007 are unavailable and this hinders us from considering panel data estimation between export intensity and dependent covariates.

Other firm characteristics variables such as total employment, firm age, innovation, and average wage are also controlled for in the model. Justification for including these variables in the model is as follows. It is expected that firms of greater size and more experience in business are more likely to achieve higher productivity. In addition, innovation is added as an independent variable based on the finding that there is a potential linkage between innovation activities and productivity growth (Grazzi, 2012).

Furthermore, average wages as an indication of the quality of human resources have been found to partly explain change in productivity (Ranjan and Raychaudhuri, 2011; Tsou, Liu, Hammitt, and Wang, 2008). Accordingly, this index also is added to the model.

Finally, as discussed earlier, various characteristics of industrial sectors, and the locations of firms might have varying effects on the relationship between export participation and productivity growth. Consequently, these variables also were controlled for in the model. Statistical descriptions and definitions of variables in the regression analysis are presented in Table 3.2.

Table 3.2: Definitions and measurement of variables in the model of the role of export participation in productivity and its decomposition

Variables	Definitions and measurements	Obs	Mean	Sd
Dependent Variables				
TFPc	Total factor productivity change predicted from stochastic frontier production function (ratio)	3,328	0.156	0.118
TPc	Technical change predicted from stochastic frontier production function (ratio)	3,328	0.160	0.053
TEc	Technical efficiency change predicted from stochastic frontier production function (ratio)	3,328	-0.025	0.009
SEc	Scale efficiency change predicted from stochastic frontier production function (ratio)	3,328	0.021	0.09
TFPc	Total factor productivity change predicted from Levinsohn-Petrin methodology (ratio)	3,328	0.118	0.504
Controlled variables				
Exporter	1 if firm has export activities; 0 otherwise (dummy variable)	3328	0.0525	0.223
Firm size	Total employment (number)	3,328	15.936	27.94
Firm age	The number of years since established (number)	3,328	15.052	11.124
Average wage	Ratio of total wage to total employees (ratio)	3328	4.033	3.807
Innovation dummy	1 if firms introduced new products, made major improvements in existing products, or introduced new production processes or technology, 0 otherwise (dummy variable)	3,328	0.469	0.499
Urban dummy	1 if firm located in Hanoi, Haiphong or Ho Chi Minh, 0 otherwise (dummy variable)	3,328	0.3846	0.486
Low tech sectors	1 if firms belong to low tech sectors, 0 otherwise (dummy variable)	3328	0.563	0.496
Instrument variables				
Ethnicity of owners	1 if owners belong to minority ethnic group, 0 otherwise (dummy variable)	3,328	0.071	0.256
Trade link	1 if firms have a long-term relationship with foreign partners, 0 otherwise (dummy variable)	3,328	0.031	0.174

3.3.1.4 Estimation methods

When using OLS to estimate the relationship between export participation and productivity growth and its components, a recognized problem arises in that results can be biased because of unobservable firm characteristics. In order to solve this problem, some previous studies (e.g., Fryges and Wagner, 2010;

Wagner, 2011) have used fixed-effect (FE) regression with panel data to consider the impact of export participation on firm performance. This method can overcome bias in estimated results, where unobservable characteristics are treated as time-invariant factors of the error (Cameron and Trivedi, 2009).

Using a fixed-effect panel data model may capture time-invariant unobserved characteristics. However, it cannot solve time-variant unobserved firm or industry characteristics that might cause an endogeneity problem (Sun and Hong, 2011). An alternative approach called "matching" has been used as a means to solve this problem in previous studies (e.g., Greenaway and Yu, 2004; Wagner, 2002). Nevertheless, as indicated by Park et al. (2010), matching can eliminate the selection-bias of observed characteristics but it is unable to capture unobservable factors.

Others have addressed the endogeneity problem by using the dynamic generalized method of moments system (GMM) with panel data (Bigsten and Gebreeyesus, 2009; Van Biesebroeck, 2005). This approach is impossible to implement with the panel dataset in this paper, simply because the timespan of the available data was too short (2 years for 2007 and 2009). Another common method of dealing with endogeneity involves the use of instrumental variables (Wooldridge, 2002), which have been employed recently to consider the impact of export status on productivity growth (Kraay, 1999; Lileeva and Trefler, 2010; Park et al., 2010; Sun and Hong, 2011).

Fixed-effect instrumental variable estimation with panel data for the 2 years of 2007 and 2009 was conducted in this research. A set of potential instrumental variables that have an impact on export participation but do not have

a relationship with the error term of the equation output were employed (the error terms in productivity growth, technical progress, technical efficiency, and scale efficiency equations).

The ethnicity of owners was used as an instrumental variable candidate. As discussed by Van Biesebroeck (2005), the ethnicity of owners has a close relationship with a firm's likelihood to engage in export activity. It is expected that owners within a minority community are able to speak more than one language and thus possess an advantageous skill that undoubtedly helps firms when exporting. Moreover, the long term relationship of firms with foreign partners is included in this study as an additional instrument. I expect that SMEs with constrained resources, weak market influence, and limited knowledge may take advantage of networks and their relationships with overseas partners to overcome entry costs and participate in export markets.

Although the potential endogenous variable (export participation) is a binary variable, I did not apply any special considerations when estimating the impact of export activity on productivity growth by instrumental variable (IV) regression (Wooldridge, 2002). In addition, as discussed by Angrist and Pischke (2008), IV regression produces consistent results regardless of whether or not the first stage model is correctly specified. IV regression with the option of GMM was employed because of the benefit of being able to cope with measurement errors when the endogeneity variable is binary (Bascle, 2008). GMM estimation is also useful because it provides the most efficient estimation when the model suffers from heterogeneity problems (Baum, Schaffer, and Stillman, 2003).

3.3.2. Data Sources

The information for this study was drawn from recent micro dataset of non-state domestic small and medium enterprises in 2005, 2007, and 2009. This data was produced by the Institute of Labour Science and Social Affairs (ILSSA) in collaboration with the Central Institute for Economic Management (CIEM) and the Department of Economics, Copenhagen University, Denmark.

The inherent advantages of the dataset are as follows. First, this is a uniquely rich dataset surveyed from ten provinces within three regions of Vietnam: the North, Centre and South. It covers all the major manufacturing sectors, namely food processing, wood products, fabricated metal products and other sectors. After excluding missing values and outliers and checking the consistency of time-invariant variables among the three survey rounds, the 2821 enterprises comprising the original dataset were interviewed in 2005, 2635 firms were interviewed in 2007, while a slightly larger number of 2655 were interviewed in 2009. Database was created comprising of 1664 repeatedly interviewed firms every 2 years since 2005. Secondly, the dataset contains the main information on the export status of the enterprise, the number of labourers, productive capital, location, economic indicators, and innovative activities. This makes possible a test of the influence of export status on productivity growth and vice versa.

A potential problem with time variant data is that they are often expressed in current prices. Therefore, our data on current variables are deflated to 1994 prices using GDP deflators to avoid bias that might arise because of inflation.

3.4 Empirical results and discussion

This section presents the empirical findings of testing the self-selection hypothesis for firms, followed by the estimated regression results of various methods when considering the impact of export participation on productivity growth and its components.

3.4.1 Determinants of export participation

As presented in Table 3.3, when examining productivity measured by different methods, its role in determining export participation is found to be robust. When considering the relationship between exporting and productivity, TFP-Levinsohn Petrin is a popular methodology.[17] As shown in column 1, Table 3.3, productivity has a statistically significant, positive effect on export participation when controlling for both the observable and unobservable heterogeneity of firms.

Although labour productivity reflects one part of productivity, it is a conventional measurement in previous studies and is therefore used for purposes of comparison. The estimated coefficient of labour productivity on export participation is positive and statistically significant, confirming that productivity has influence on entry into exporting. These results are displayed in column 3, Table 3.3.

[17] See Appendix 5 for discussion of calculation.

Table 3.3: Random effects dynamic Probit[18]

VARIABLES	(1)	(2)	(3)	(4)	(5)
$Export_{(t-1)}$	1.3143**	1.3410**	1.3160**	1.3229**	1.3231**
	(0.287)	(0.284)	(0.285)	(0.283)	(0.283)
Levin & Petrin	0.0023**				
$TFP_{(t)}$	(0.001)				
Stochastic frontier		1.6207**			
$TFP_{c\,(t)}$		(0.373)			
$Lb_{(t)}$			0.0029*		
			(0.001)		
$TFP_{(t-1)}$				-0.0000	
				(0.000)	
$Lb_{(t-1)}$					-0.0001
					(0.001)
Firm age $_{(t-1)}$	-0.0065	-0.0060	-0.0065	-0.0065	-0.0065
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Firm $size_{(t-1)}$	0.0029*	0.0035**	0.0032*	0.0033*	0.0032*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Capital $intensity_{(t-1)}$	0.0000	0.0000	-0.0000	0.0000	0.0001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade relationship $_{(t-1)}$	0.6175**	0.6252**	0.6156**	0.6127**	0.6130**
	(0.232)	(0.232)	(0.231)	(0.230)	(0.231)
Average $wage_{(t-1)}$	0.0016	-0.0025	0.0022	0.0032	0.0034
	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
Credit constraint $_{(t-1)}$	0.1201	0.1301	0.1251	0.1227	0.1228
	(0.149)	(0.150)	(0.148)	(0.148)	(0.148)
Innovation $_{(t-1)}$	0.2230+	0.2132+	0.2256+	0.2270*	0.2270*
	(0.116)	(0.116)	(0.115)	(0.114)	(0.114)
Government support $_{(t-1)}$	-0.0293	-0.0584	-0.0286	-0.0342	-0.0344
	(0.110)	(0.111)	(0.110)	(0.110)	(0.110)
Urban dummy	0.1401	0.1274	0.1480	0.1686	0.1688
	(0.106)	(0.106)	(0.106)	(0.105)	(0.105)
Join-stock ownership	0.7885**	0.6277*	0.8103**	0.8206**	0.8207**
	(0.255)	(0.259)	(0.255)	(0.254)	(0.254)
Private ownership	0.5719**	0.4981**	0.5859**	0.6012**	0.6014**
	(0.126)	(0.126)	(0.125)	(0.124)	(0.124)
Partnership ownership	0.7136**	0.6098**	0.7203**	0.7114**	0.7111**
	(0.224)	(0.226)	(0.224)	(0.223)	(0.223)
Low tech	0.2079*	0.1840+	0.2006*	0.1831+	0.1827+
	(0.100)	(0.099)	(0.100)	(0.098)	(0.098)
Year 2009	0.1404	0.2248*	0.1433	0.1487	0.1487
	(0.107)	(0.109)	(0.106)	(0.106)	(0.106)
Constant	-2.7691**	-2.9928**	-2.7742**	-2.7356**	-2.7347**
	(0.209)	(0.220)	(0.209)	(0.204)	(0.204)
Observations	4,992	4,992	4,992	4,992	4,992

Notes: Robust standard errors in parentheses; (**), (*), and ($^{+}$) indicate levels of significance at 1%, 5% and 10% respectively. The estimated coefficients are reported. The base categories for ownership are household ownership, while reference group for low tech dummy is a combined group of medium and high tech sectors.

[18] As a robustness check, the above specification is re-estimated by random probit model. However, qualitatively similar results are yielded in all cases. The results are displayed in Appendix 2.

Furthermore, using productivity change calculated on the basis of stochastic frontiers methodology but not productivity level, I still find evidence of more productive firms self-selecting into the export market. The above results indicate that not only productivity but also productivity growth increases the probability of export participation. These findings support the hypothesis that self-selection occurs for more productive firms with regards to export participation in Vietnam.

However, when using a one-period lagged productivity variable, a statistically insignificant impact of productivity on export participation is observed in the column 4 and 5, Table 3.3. The insignificant impact of lagged productivity on export participation may simply be a reflection of the 2-year dataset since a 2-year lagged distance seems to be a long period for observing the influence of past productivity on a firm's decision about current export participation. These results suggest that the effects of productivity on export status are short-term and diminish after 2 years.

Moving on to the firm characteristics variable, as can be seen from Table 3.3, regression results of the determinants of export participation reveal that sunk cost proxied by lagged export status is an important factor in determining firms' export participation. Similar findings are also reported in some previous studies. For example, in a study of American manufacturing firms, Bernard and Jensen (2004b) indicate that having engaged in export 1 or 2 years ago impacts positively and significantly on exporting today.

With regard to the impact of innovative activities on export participation, manufacturing firms with innovative activities proved to have a higher probability

of exporting than their counterparts without innovation. The results are consistent with the majority of previous studies (e.g., Huang et al., 2008; Nguyen, Pham, Nguyen, and Nguyen, 2008) and indicate that innovation is one of the decisive factors in participating in export trade.

As expected, household firms that accounted for the majority of surveyed enterprises (around 70%) had a lower likelihood of exporting than their private counterparts (joint-stock, cooperatives and limited companies). This result is in accordance with Cuong et al. (2010) who found that there is a higher entry barrier into the export market for household enterprises compared with their Vietnamese manufacturing private SME counterparts. Household enterprises are often characterized by informality and small-scale operations (Cuong et al., 2010). Consequently, such characteristics may become impediments for businesses wanting to participate in the export market.

While more years in business do not constitute a factor significantly influencing the probability that a firm will export, firm size in terms of the number of labourers appears to be important in export activities. Firms of larger size are much more likely to enter the export market. This finding is consistent with most other research and seems to reflect the fact that SMEs export labour-intensive products.

Considering the influence of trade relationships and sector characteristics on the decision to export, SMEs that maintain a long-term relationship with foreign customers show a higher probability of exporting than firms without such a relationship. Obviously, SMEs with resource constraints may take advantage of their networking relationship to deal with entry costs when taking part in foreign

markets. As expected, SMEs in low technology sectors often have a higher exporting probability than medium and high technology sectors. The results are appropriate for the Vietnamese context where the majority of exported products come from low technology industries (Ministry of Industry and Trade of Vietnam and United Nations Industrial Development Organisation, 2011).

Finally, the influence of government assistance on export participation is insignificant. This implies that the supporting role of government is not effective in boosting export activities. As documented by Tran, Grafton, and Kompas (2008), Vietnamese government aid does not seem to be based on firms' performance criteria. In addition, corruption and bribery remain prevalent and staff in public sectors lag behind in skills and qualifications (De Jong, Tu, and Van Ees, 2012; Rand and Tarp, 2012). Consequently, these factors may limit the benefits of government support. The empirical results from Table 3.3 also show that there is insignificant linkage between credit constraints and the probability of firms engaging in export trade.

3.4.2 The impact of export participation on productivity and its decomposition

Table 3.4: Fixed-effect panel data results[19]

VARIABLES	Levin-Petrin	Stochastic Frontier[20]			
	TFP_c	TFP_c	TP_c	TE_c	SE_c
	(1)	(2)	(3)	(4)	(5)
Export	0.1047	-0.0158	-0.0035	0.0000	-0.0124
	(0.103)	(0.016)	(0.003)	(0.000)	(0.014)
Firm size	0.0032	0.0098**	0.0013**	-0.0000	0.0084**
	(0.003)	(0.001)	(0.000)	(0.000)	(0.001)
Firm size squared	-0.0000	-0.0000**	-0.0000**	0.0000+	-0.0000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	-0.0023	0.0005	0.0001	0.0000	0.0004
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Average wage	0.0617**	0.0017+	0.0006**	0.0000**	0.0010
	(0.011)	(0.001)	(0.000)	(0.000)	(0.001)
Innovation dummy	0.0596*	-0.0042	0.0003	-0.0000	-0.0045
	(0.029)	(0.006)	(0.001)	(0.000)	(0.005)
Low tech sectors	0.0167	-0.0104	-0.0008	-0.0001	-0.0095
	(0.061)	(0.011)	(0.002)	(0.000)	(0.009)
Household ownership	0.1052	0.0008	-0.0064*	-0.0001	0.0073
	(0.069)	(0.014)	(0.003)	(0.000)	(0.012)
Year 2009	-0.0914**	-0.0422**	-0.0294**	-0.0014**	-0.0114**
	(0.020)	(0.003)	(0.001)	(0.000)	(0.003)
Constant	-0.2110**	0.0487**	0.1599**	-0.0243**	-0.0869**
	(0.082)	(0.017)	(0.003)	(0.000)	(0.015)
Observations	3,328	3,328	3,328	3,328	3,328
R-squared	0.081	0.323	0.589	0.872	0.281

Notes: Robust clustered standard errors in parentheses; ** significance at 1%, * significance at 5%, + significance at 10%.

As displayed in Table 3.4, the results in the equation of TFP in columns (1) and (2) reveal that export participation has a statistically insignificant effect on productivity regardless of whether change in productivity is calculated on the

[19] The urban dummy is dropped since it does not vary within each group (Andrews et. al, 2006)

[20] According to a report on Vietnamese industrial competitiveness (2011), firm export behaviour is much different at the various levels of technology. Hence, the role of export participation in productivity growth and its decomposition is investigated across technology levels. Statistically insignificant effects of exporting status on changes in TFP and each of its components are also found when dividing the whole sample into low-tech, medium-tech and high-tech sectors according to the classification of the General Statistical Office of Vietnam (see Appendix 7). The results are displayed in Appendix 6.

basis of Levishon-Petrin or Stochastic Frontier methodologies. This does not support the hypothesis of firms' learning by exporting.

Moving to each component of TFP growth, the coefficient relating to the influence of export participation on scale efficiency is statistically insignificant. In other words, there is no considerable difference between exporters and non-exporters in scale efficiency change. Furthermore, investigation of the link between a firm's decision to export and technical efficiency, empirical results indicate a statistically insignificant but positive influence of export participation on technical efficiency change. The empirical evidence is also in line with a recent study conducted by Le and Harvie (2010) who concluded that exporting SMEs demonstrate superior efficiency compared with non-exporting SMEs but the difference is statistically insignificant.

These findings, however, are inconsistent with the empirical evidence put forward by Pham, Dao and Reilly (2010), who suggest that export participation has a positive and statistically significant effect on technical efficiency. One reason for the contrasting finding of Pham, Dao and Reilly (2010) could be that their study results were based on using a national scale dataset from which informal enterprises had been excluded. However, the majority of SMEs which are informal enterprises appear in our regression sample.

Export participation also seems not to be a good predictor for change in technical progress. The estimated coefficient of export participation exhibits a statistically insignificant linkage with technological progress. Evidence of greater participation in export markets does not encourage firms to upgrade technology, a conclusion that accords with Fu's results (2005). Using Chinese industry-level

panel data from 1990-1997, her results show that the coefficient of the influence of export activity on technical progress is not statistically significant.

The statistically insignificant impact of export status on productivity and its components may stem from several reasons. First, an export dummy may not adequately capture the learning by exporting process because a binary indicator for export makes no allowance for capturing the degree of export participation. Details on export intensity for 2007 are not available, however, and this has consequently prevented us from considering such an exercise for the panel dataset.

In addition, the learning effect of exporting may depend on the export market destination, whether to developed or developing countries (Brambilla, Lederman, and Porto, 2012). However, this dataset unavailability limits us from investigating this avenue further.

Moreover, learning by exporting may take time but a short period panel dataset (2 years for 2007 and 2009) has prevented us from considering various scenarios such as export patterns (new entrants, exporters for only 2 years, exporters with 4 years' experience and more) in testing the learning by exporting hypothesis.

Finally, the majority of Vietnamese export products are labour-intensive and of low added value (Tran, 2011). For SMEs exporting manufactured products, the proportion of these products is much higher than that in Vietnam's total exports (Kokko and Sjöholm, 2005). Furthermore, Vietnamese SMEs must often deal with limited capital and resources (Rand, 2007). Consequently, exporting SMEs may prefer to meet the requirements of overseas customers by offering low cost

and stable quality instead of focusing on innovative activities and the application of new technologies. As a result, export participation may not help firms gain much improvement through new knowledge, expertise and technology, and this in turn hinders improvement in productivity and technological progress.

Considering the relationship between firm characteristics and productivity growth, while more years in business had little or no influence on firms' productivity, the role of firm size is reflected clearly in the estimation results. In particular, firm size as measured by total employment has a statistically significant and positive relationship with productivity growth. In addition, average wage as proxy for the quality of the labour force has a positive influence on the growth of productivity. A positive relationship between these variables and productivity growth may reflect the important role of human resource quality in improving the productivity of Vietnamese enterprises.

As shown by Table 3.4, the time dummy variable has a negative impact on productivity growth. This may be explained by the fact that the global economic crisis in 2008 might have a negative effect on the Vietnamese economy and this in turn led to a negative effect on improvement in productivity and its decomposition.

3.4.3 The impact of export participation on productivity and its decomposition

Table 3.5: Fixed-effect IV estimates (GMM estimation)

VARIABLES	Levinson-Petrin	Stochastic Frontier			
	TFP_c	TFP_c	TP_c	TE_c	SE_c
	(1)	(2)	(3)	(4)	(5)
Export	-0.0016	0.0141	0.0026	-0.0000	0.0113
	(0.216)	(0.031)	(0.006)	(0.000)	(0.027)
Firm size	0.0034	0.0097**	0.0013**	-0.0000	0.0084**
	(0.003)	(0.001)	(0.000)	(0.000)	(0.001)
Firm size squared	-0.0000	-0.0000**	-0.0000**	0.0000+	-0.0000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	-0.0021	0.0004	0.0001	0.0000	0.0004
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Average wage	0.0617**	0.0016	0.0006*	0.0000**	0.0010
	(0.011)	(0.001)	(0.000)	(0.000)	(0.001)
Innovation dummy	0.0631*	-0.0050	0.0001	-0.0000	-0.0052
	(0.029)	(0.006)	(0.001)	(0.000)	(0.005)
Low tech sectors	0.0203	-0.0115	-0.0009	-0.0001	-0.0105
	(0.061)	(0.011)	(0.002)	(0.000)	(0.009)
Household ownership	0.1004	0.0017	-0.0063*	-0.0001	0.0081
	(0.069)	(0.014)	(0.003)	(0.000)	(0.012)
Year 2009	-0.0896**	-0.0414**	-0.0294**	-0.0014**	-0.0104**
	(0.020)	(0.003)	(0.001)	(0.000)	(0.003)
Observations	3,328	3,328	3,328	3,328	3,328
R-squared	0.080	0.322	0.588	0.871	0.280
Excluded instruments	Trade relationship and ethnicity of owner	Trade relationship and ethnicity of owner	Trade relationship and ethnicity of owner	Trade relationship and ethnicity of owner	Trade relationship and ethnicity of owner
Weak identification test (Cragg-Donald Wald F statistic) [Stock-Yogo weak id test critical value at 10%]	408.939 [19.93]	408.939 [19.93]	408.939 [19.93]	408.939 [19.93]	408.939 [19.93]
Hansen J statistic (overid test) [p-value in bracket]	1.341 [0.2468]	2.445 [0.117]	0.000 [0.985]	0.167 [0.682]	3.029 [0.082]
Endogeneity test of export participation (p-value)	0.482	0.262	0.199	0.577	0.296

Notes: Robust clustered standard errors in parentheses; ** significance at 1%, * significance at 5%, + significance at 10%.

In order to check the robustness of fixed-effect estimations, the above model is re-estimated using fixed-effect instrumental variable regressions. Using invalid and weak instrumental variables must be avoided and therefore the econometric background for our instrumental variables is formed based on several statistical tests.

First, the values of the Cragg-Donald Wald F statistic in all models are 408.939, which is greater than the reported Stock-Yogo's weak identification critical value of 19.93. As a result, we can say that the relevance requirement of our instruments is satisfied. In addition, the Hansen J statistic was not statistically significant at the conventional level (5%) in all models and thus confirmed the validity of instrumental variables. The above specification test results of instrumental variables candidates suggested that the ethnicity of owners and long term relationships with foreign partners were good instruments. These results also support the validity of instrumental variables for cases of technical progress, technical efficiency and scale efficiency. However, the *p*-value for the test statistic in the last row of Table 3.5 indicates that the hypothesis of the exogeneity of export participation with productivity growth and its components may be accepted at the conventional level (5%) for equations.

As displayed by Table 3.5 above, a similar picture is witnessed when considering the effect of firm characteristics on productivity. For instance, while firm age does not impact on change in productivity and each component of it, larger firms achieve higher productivity. Furthermore, considering the evidence for post-exporting productivity improvement, the results from IV model also

indicate a series of statistically insignificant results for productivity and its components arising from export decisions.

3.5 Summary of findings and policy implications

In order to find the sources of higher productivity among exporters compared with non-exporters**,** this chapter has undertaken the testing of two hypotheses (self-selection and learning by exporting) in Vietnamese manufacturing SMEs. Our empirical results are consistent with much econometric evidence from other countries (e.g., Bernard and Jensen, 1999; International Study Group on Exports and Productivity, 2008). This evidence indicates that the higher productivity of exporters in the Vietnamese SME context derives from the self-selection of high productivity firms who participate in exporting rather than from the learning by exporting process.

Several other interesting results are also found in testing the first hypothesis. For example, while firm age has a statistically insignificant and negligible impact on export probability, the more labour enterprises have available to them, the higher the probability of enterprises participating in the export market. Another important determinant of the likelihood that private firms will export is innovation capability. This suggests that supporting activities for improvement in innovation are important for helping firms increase the probability of exporting. Moreover, while firms receive few benefits from government support, a long-term relationship with foreign partners plays an important role in boosting the export activities of firms, suggesting that improving and maintaining links with foreign partners are necessary for increasing the probability of firms' participating in export.

Regarding the role of export participation on productivity growth, this study adopts the stochastic frontier approach to extend the literature by decomposing TFP growth into technical progress change, technical efficiency change and scale efficiency change. The empirical results reveal that statistically, the export status of firms shows insignificant positive association with TFP growth, scale change, technical efficiency and technical progress**.** The results are confirmed when using fixed-effect instrumental variables regression.

With policy implications in view, the above results show that productivity is one of the main entry barriers for export participation by SMEs and export participation does not improve productivity or its decomposition. As discussed previously, only 3-6% of non-state private manufacturing SMEs participate in exporting even though Vietnam has a variety of trade promotion policies. These findings might imply that export promotion policies may not be effective unless accompanied by strategies to help SMEs become more productive.

It should be noted that although the results of the study are informative, they may not apply to other periods of time. Moreover, the survey data represent an every 2-year panel dataset. This prevents us from considering the impact of 1-year lagged variables on the current status of exporting. Although the SFPF approach is preferable, it has been criticized for imposing a specific function form. Accordingly, other studies can use DEA to calculate productivity and its decomposition and provide comparative results.

CHAPTER FOUR: FIRM EXPORT BEHAVIOUR AND EMPLOYEE BENEFITS

4.1 Introduction

By exploring the TFP black box, the previous chapter indicates that the reason for exporters having higher productivity than non-exporters results from a self-selection mechanism rather than learning by exporting. As a continuation, this chapter considers whether the higher productivity advantages of exporters may be converted into benefits for workers in the form of higher wages and better quality of employment.[21]

First, the question of the effect on wages of the decision to export has been investigated widely in both developing and developed countries. Empirical observations across most studies based on firm-level data demonstrate that export status has a positive impact on employee wages (see Schank et al., 2007 for a review). However, these results may suffer from potential bias by failing to control for worker characteristics when considering wage differentials (Schank et al., 2007).

Although the next wave of studies followed the approach of applying matched employer-employee data, which is much more suitable for investigating the export wage premium, there are a few empirical evidence for the wage premium among exporters, focusing on only a few countries (Wagner, 2012).

[21] As indicated by Rand and Torm (2011), employment quality is defined as the worker contract status and "an improvement in employment quality is measured by a decrease in the use of casual workers (an increase in the share of workers with formal contract)." In Vietnam, the majority of casual workers do not gain social benefits (e.g., social insurance, health insurance, sick leave and annual leave) because they are often employed without written contracts.

Furthermore, these empirical results often varied in different contexts and it therefore seems inappropriate to apply the results from one country to another. Based on a unique linked firm-worker panel dataset of SMEs, our study aims to extend the literature by investigating whether export participation does have an impact on wage differences in the Vietnamese context.

Another important contribution that differentiates this study from previous research is our focus on the linkage between export status and employment quality. While there are numerous empirical studies of exporter wage premiums, the role of export participation on quality of employment remains largely unexplored, possibly due to the limitation in the available datasets. Among the few existing studies, Were (2011) is considered a pioneering study of the impact of export participation on employment quality. However, the results are mixed. A positive impact is observed when using a panel data fixed-effects approach for Kenya in 1994-5 but this is not the case for 2003 using cross-sectional data.

The lack of clarity concerning the nexus between export participation and employment quality is the motivation for this study to examine this linkage in the Vietnamese context. It is believed that there is a positive relationship between export activities and jobs created because Vietnam is a labour-intensive exporting country. More specifically, Kien and Heo (2009) indicate that increasing exports in manufacturing sectors has led to a significant increase in the demand for labour.

However, there appears to have been little interest in considering whether export participation may be a driving force in improving employment quality. To the best of my knowledge, this research on the subject is among the first studies

contributing empirical evidence about the impact of export participation on employment quality at the firm level. With a view to policy implications, clarifying our understanding about the impact of export participation on the contract status of employees is of great importance. A common belief among policy makers in Vietnam is that export promotion is important for the economy, and therefore export-led growth policies are at the heart of policy programmes (Nadvi et al., 2004). Nevertheless, given that a positive linkage exists between export activities and the proportion of casual workers, export oriented and supporting policies need to focus not only on the amount of employment created but also on employment quality.

The chapter is structured as follows: Section 4.2 briefly summarises the theoretical mechanism and empirical evidence relating to the influence of export participation on wages and employment quality. Section 4.3 displays the data sources and the methodology used in this study. The empirical results and discussion follow in Section 4.4, and the last section provides a summary and discusses policy implications.

4.2 Literature review

4.2.1 Wage premiums and export status

There are some important theoretical mechanisms to explain differences in wages as a result of increased export activity. The first, drawing inspiration from the Stolper-Samuel theorem, appears in the Heckscher-Ohlin model framework. Stolper and Samuel indicate that greater international trade integration in a country will lead to a rise in returns from heavily used production factors and a

fall in returns from factors that are used less intensively in the production process (Samuelson, 1948; Stolper and Samuelson, 1941).

For example, a developing country exports goods that are the product of intensive unskilled labour whereas a developed country exports goods produced by intensive skilled labour. The theorem implies that an expansion in international trade will result in a high demand for unskilled labour in developing countries leading in turn to wage improvement for unskilled labour and a fall in the wages of skilled employees. In contrast, the skilled labour used most intensively in developed countries is performed by employees who are paid more highly and this lowers the wages of those engaged in unskilled labour (Breau and Rigby, 2010).

More recently, Verhoogen (2008) has argued that the above mechanism only partly explains wage inequality in the labour market in developing countries. As a result, a new approach has been adapted when investigating the links between export activities and wage differentials in developing countries. The author argued that the quality improvement of goods is the main reason for wage premiums between exporters and non-exporters. The author explained that to meet the requirement of quality goods, plants in poor countries need to upgrade product quality when exporting to foreign markets. In order to produce higher-quality products, plants need better quality employees and these employees must be paid higher wages.

A further explanation is provided by Helpman, Itskhoki, and Redding (2010) who argued that high productivity firms "self-select" for exporting to world markets and participation in export trade helps these enterprises gain higher

revenue than their non-exporting counterparts. Consequently, higher revenues encourage exporters to scrutinise their workforce and exclude workers of low ability. Hence, employees in exporting enterprises often have greater than average ability and are paid more than those in non-exporting firms.

While theoretical predictions are readily understood, the empirical findings on the role of export status on wage differences are inconclusive. Many studies have been conducted in both developed and developing countries. For example, studies in the United States (Bernard and Jensen, 1995, 1999), Germany (Bernard and Wagner, 1997) and England (Greenaway and Yu, 2004) have found that export wage premiums vary in range from 2% to 15%.

Moreover, a positive correlation between export activity and wage differentials is also confirmed in other empirical findings in the context of developing countries, e.g., Taiwan (Liu et al., 1999) and African countries (Van Biesebroeck, 2005). Studies also show that the effects vary across different types of skills and occupations. For instance, Bernard and Wagner (1997) indicate that while there are no export wage premiums among production workers, the benefit of export activities for wage premiums is 3.3% among non-production staff. Moreover, in an analysis of the effects of export participation on the wages of Taiwanese manufacturing firms, Tsou, Liu, and Huang (2006) used plant level data for the period 1991-1996 to investigate the impact of export status on the wages of exporting and non-exporting enterprises. Their results reveal that the effect of exporting on wages is generally positive for skilled workers but negative for unskilled workers.

The above studies have relied only on firm-level data to test the export status wage premium relationship which may create biased results and overstate the role of exporting for wage differentials (Schank et al., 2007). A more recent approach used an employer-employee matched dataset combining both employer and employee characteristics when considering the link between export status and wage differences. Among pioneering studies, Milner and Tandrayen (2007) indicated a positive linkage between export participation and wages in a study of African countries when controlling for both firm and individual characteristics. Similarly, Schank et al. (2007) in a study of German firms and Breau and Brown (2011) in the Canadian context reached consensus. Their results show that workers in exporting firms are paid higher wages than those in non-exporting firms but these wage premiums are smaller after controlling for individual level characteristics.

In contrast, in a study in the United States, Breau and Rigby (2006) investigated the effect of exporting on wages in exporting and non-exporting firms using longitudinal firm level data in the period 1990-2000. They found that there is a significant difference in wage payment between exporting and non-exporting firms with controlling variables at firm-characteristic level. However, the results disappeared completely when worker characteristics were taken into account.

Furthermore, Munch and Skaksen (2008) tested for wage differentials in Danish manufacturing firms and found a negative association between exportation status and wage differences in enterprises when using a worker-firm dataset for the period 1995-2002. They indicated, however, that interaction between export activity and a high level of skills has a positive impact on wage differences. These

results imply that exporting in itself does not improve the wage of workers but that an export wage premium exists in firms with a workforce possessing a sufficiently high level of skills.

More recently, employing a German longitudinal matched employee-employer dataset to test for a causal link between export status and wages, Schank, Schnabel, and Wagner (2010) show that the role of export status on wages is overstated and that higher wages among exporters is due to the self-selection of higher productivity firms rather than the export activities of firms.

In Vietnam, investigation of the relationship between wages and export participation at the plant level is severely limited. In a pioneering effort, Hiep and Ohta (2009) show that export activities do not have an impact on wage differentials. Nevertheless, when considering such a relationship, their conclusions may be biased since the regression results controlled only for plant-level characteristics (Schank et al., 2007). In addition, their findings are based on data surveyed on a retrospective basis and this raises the concern of high measurement error in the data. A more recent study of the determinant of wages has been conducted by Larsen, Rand, and Torm (2011). A shortcoming of their study, however, is that they use cross-sectional data that do not allow controlling for unobservable factors. In addition, this study focuses on the impact of social networks on wages and does not consider the influence of trade related variables on wages.

4.2.2 Employment quality and export status

There are various views dealing with the way export status affects employment quality. On the one hand, Helpman et al. (2010) indicated that the average quality of the human capital of exporters is higher than that of non-exporters. In addition, better quality of employment is needed to meet the need for higher product quality in the export market (Verhoogen, 2008). Intuitively, one assumes that casual workers typically have lower skills and ability than regular workers. All things considered, it is expected that export participation by firms would lead to a decrease in the share of casual workers.

On the other hand, other research (e.g., Aw et al., 2000; Isgut, 2001) frequently argues that when firms participate in export markets, they face higher competition than they do in domestic markets. An increase in cost-cutting measures may help firms to overcome high competition (Were, 2011). As a result, exporters try to find highly efficient means in the use of their resources (Feder, 1983). The employment of non-regular or temporary workers can be one method to cut costs since casual workers are often paid less than regular employees. Hence, it is hypothesized that export participation and the share of casual workers are positively associated.

While many studies (e.g., Greenaway, Hine, and Wright, 1999) consider the relationship between exporting and the growth in numbers employed in the manufacturing sector, empirical investigation about the nexus between export participation and employment quality is limited. A pioneering contribution to the literature is a study conducted in Kenya, in which Were (2011) considers the impact of export participation on employment quality. By using a fixed-effect

approach with a 1994-1995 panel dataset, the study results show that export participation has a positive impact on the share of casual workers. However, if using only a cross-sectional dataset from 2003, the decision to export has only an insignificant effect on the share of casual workers. All things considered, this study indicates that there is no strong evidence of the impact of export participation on the ratio of casual workers.

Other studies also consider the determinants of employment quality (e.g., Mangan and Williams, 1999; Simpson, Dawkins, and Madden, 1997). However, these studies fail to consider the effect of factors related to exporting activity for the ratio of casual workers.

4.2.3 Summary

In summary, based on different employer-employee datasets from various countries, existing empirical studies of wage premiums and export status have not reached consensus. In addition, while a few studies show that export activities boost employment generation, the empirical evidence of a linkage between export status and employment quality is severely limited. All in all, it is necessary to investigate these topics further in a new context.

4.3 Data sources and methodology

4.3.1 Data sources

The data source for this study comes from SME surveys conducted by the ministry of Labour, Invalid and Social Affairs (MOLISA) in cooperation with Copenhagen University. The surveys were conducted in 10 provinces including 3 urban cities: Ho Chi Minh, Ha Noi, and Hai Phong and 7 rural provinces: Long

An, Ha Tay, Quang Nam, Phu Tho, Nge An, Khanh Hoa and Lam Dong. The sample was stratified by ownership that included all types of non-state firms (see Cuong et al., 2008 for details of the data source).

A panel dataset for the years 2007 and 2009 was used for considering the impact of export participation on wage differentials because only these surveys included two separate modules for enterprise and worker characteristics. The enterprise module provides detailed firm-level data including firm characteristics (e.g., firm size, age, export status) and economic indicators, while the employee module is a set of separate worker questionnaires yielding information about each worker in surveyed enterprises, including age, sex, educational level, and occupation of workers in enterprises. It also includes the number of hours worked and the wages of each individual.

The employee module was implemented in 581 firms with 1043 workers surveyed, and 1444 workers of 577 firms surveyed in 2007 and 2009, respectively. On average, two or three workers were sampled in each firm.[22] After cleaning the dataset, excluding missing information and outliers, a combination between these modules created a unique employer-employee unbalanced panel dataset with 1725 workers covering 586 firms. This data source provides uniquely valuable information for both plant-level and individual characteristics for this study.

[22] As indicated by Larsen, Rand and Torm (2011), the employees interviewed in our sample included nearly all the various occupation categories (managers, professionals, office workers, sales workers, service workers and production workers). In addition, these employees were randomly sampled from random firm sub-samples (Torm, 2012). They can therefore be regarded as representative.

Two quantitative surveys about firm level data in 2007 and 2009 were also chosen to study the effect of export participation on employment quality. One of the requirements of fractional probit panel estimates is that they must be based on a balanced panel dataset of all covariates in every year for each enterprise. After cleaning data and excluding missing values as well as outliers, we are left with a balanced data panel of 2988 observations in both years from around 2600 firms in each survey.

A common problem with time variant data is that it is often expressed in current prices. Accordingly, our data on current variables are deflated to 1994 prices using GDP deflators to avoid bias that might arise because of inflation. Particularly as concerns the dataset, the statistical description of the main variables in our regression estimations are displayed and explained in the methodology section of this study.

4.3.2 Methodology

4.3.2.1 The impact of export participation on wages

4.3.2.1.1 Model specification

In order to consider the impact of export activities on wage premiums, a basic specification controlling only for firm characteristics is expressed below.

$$\ln(w_{it}) = \varphi_0 + \varphi_1 X_{1it} + \varphi_3 EX_{it} + u_{it} \quad (1)$$

where the dependent variable is the real monthly wage (w_{it}). As shown in Table 4.2, the average wage is 682,000 VND when converted into 1994 prices. This proportion tends to increase slightly during the period 2007 to 2009. Among

controlled variables, export status (EX_{it}) is considered as the variable of main interest. It is captured in the model by a dummy variable for export participation. In our sample, the average export participation is 13% and this ratio increased slightly from 13% in 2007 to 13.2% in 2009.

Regarding firm level factors (X_{1it}), this study closely follows the model specification of Bernard and Jensen (1995). First, firm size is expected to have a positive relationship with wage premiums because workers in larger firms are paid higher wages (Oi and Idson, 1999). Capital intensity also is shown to have an impact on wages (Schank et al., 2007) and this variable is therefore considered in the model in terms of the ratio of capital over total employment. Table 4.2 shows that whereas firm size experienced a slight decrease, capital intensity witnessed an increase in the period 2007-2009. Furthermore, the share of women in the workforce has been included as an explanatory variable in the regression based on findings that an increase in the share of women leads to a decrease in the wage premium (Larsen et al., 2011). According to summary statistics in Table 4.2, this proportion is nearly constant throughout the research period.

In an extended specification, we add individual characteristics keeping the same firm characteristics in model (1). As a consequence, model (1) can be written as follows:

$$\ln(w_{it}) = \varphi_0 + \varphi_1 X_{1it} + \varphi_2 X_{2it} + \varphi_3 EX_{it} + u_{it} \qquad (2)$$

Among individual characteristics (X_{2it}), employees with a higher educational level are expected to earn higher wages (Mincer, 1974). Hence, the impact of education on wages has been captured by dummy variables in the

model. As shown in the statistical summary of Table 4.2, nearly 20% of employees have a university education but this ratio tends to decrease slightly from 21% to 16% in the period 2007-2009. By contrast with the high ratio of workers with a university degree, the number of people in the workforce without education is negligible (less than 2%).

The occupations of employees are also added to the model since it is found that there is a difference in pay for workers depending on their occupation (Milner and Tandrayen, 2007). Table 4.2 reveals that while the ratio of production workers is over 50% of the total sample, employees in management positions represent just over 10%. The share of production workers increases from 2007 to 2009 but the share of mangers seems to remain constant.

Other individual characteristics such as tenure and age are controlled for in the wage model, based on the expectation that more experienced workers earn higher wages (Mincer, 1974). The statistical descriptions of Table 4.2 show that the average length of work experience per worker is over 5 years and the average age for workers is over 30 years. Both indexes reflect the experience of workers in firms and the numbers are nearly constant between 2007 and 2009.

Finally, the linkage between export participation and wage differential may be affected by other factors such as industrial characteristics and locations (Breau and Brown, 2011). High-tech companies are expected to pay higher wages than firms in low tech industries, while rural firms may pay lower wages than urban firms due to differences in the standards of living among regions. Hence, a

high technology sector dummy variable and an urban dummy variable have been used to capture such effects in the model.

4.3.2.1.2 Estimation method

The ordinary least squares (OLS) method is used to estimate models (1) and (2). When using a matched employer-employee dataset, it is necessary to control for the potential association of error terms across employees of enterprises (Breau and Rigby, 2006). As a consequence, clustered robust standard errors are reported in our regression results**.** Furthermore, when considering the linkage between export participation and wage premiums, the regression results may also be biased due to unobserved factors. To overcome this problem, spell fixed-effects panel data estimations have been employed.[23] With the availability of matched employee-employer datasets, the advantage of this specification may control for unobservable time-invariant factors of both firm and worker characteristics. This is the most preferred method and has been applied in previous studies investigating exporter wage premiums (e.g., Munch and Skaksen, 2008; Schank et al., 2007).

[23] Each spell is a unique employee-employer combination.

Table 4.1: Definition and measurement of variables in the wages model

Variables	Definition	Measurement
Dependent variable		
Real wage	The monthly wage of workers is converted to 1994 prices	Numbers
Explanatory variables		
Exporter	1 if firms participate in export markets	Dummy variable
Export intensity		Ratio
Plant characteristics		
Size	Total employment	Numbers
Capital intensity	The ratio of capital per total employment	Ratio
Women share	The percentage of women in the workforce	
Individual characteristics		
Age	The age of workers	Numbers
Worker permanent status	1 if workers have a permanent labour contract, 0 otherwise	Dummy variable
Tenure	The number of years workers have been employed by the current firm	Numbers
Gender	1 if the gender of workers is male, 0 otherwise	Dummy variable
Education		
No education	1 if worker has no education, 0 otherwise	Dummy variable
Primary school	1 if worker has primary education, 0 otherwise	Dummy variable
Secondary school	1 if worker has graduated with secondary education, 0 otherwise	Dummy variable
High school	1 if worker has graduated from high school, 0 otherwise	Dummy variable
Technical certificate/ elementary worker	1 if worker has completed technical education with elementary level, 0 otherwise	Dummy variable
Technical worker without certificate	1 if worker has completed technical education without certificate, 0 otherwise	Dummy variable
Technical worker/ professional secondary	1 if worker has completed professional secondary education, 0 otherwise	Dummy variable
University	1 if worker has graduated from university, 0 otherwise	Dummy variable
Occupation		
Manager	1 if worker is a manager, 0 otherwise	Dummy variable
Professional worker	1 if worker is a professional technican, 0 otherwise	Dummy variable
Office worker	1 if worker is office staff, 0 otherwise	Dummy variable
Sales worker	1 if worker is sales staff, 0 otherwise	Dummy variable
Service worker	1 if worker is service staff, 0 otherwise	Dummy variable
Other controlled variables		
High tech sector	1 if firm is in high technology sector, 0 otherwise	Dummy variable
Year 2009	1 if year is 2009, 0 otherwise	Dummy variable
Urban dummy	1 if firms operate in Hanoi, Haiphong and Ho Chi Minh, 0 otherwise	Dummy variable

Table 4.2: Summary statistics for wage model variables

Variables	Total		2007		2009	
	Mean	SD	Mean	SD	Mean	SD
Dependent variables						
Real monthly individual wage (VND)	681.98	345.46	667.52	371.0	692.5	325.3
Explanatory variables						
Exporter	0.13	0.34	0.13	0.34	0.132	0.34
Individual characteristics						
Age	32.97	9.81	33.12	10.31	32.86	9.44
Tenure	5.43	5.07	5.42	5.17	5.43	4.99
Gender	0.59	0.49	0.59	0.49	0.59	0.49
Worker permanent status	0.97	0.15	0.96	0.18	0.98	0.11
Education						
No education	0.017	0.12	0.019	0.13	0.015	0.12
Primary school	0.059	0.23	0.055	0.23	0.063	0.24
Secondary school	0.26	0.43	0.26	0.44	0.26	0.44
High school	0.27	0.44	0.207	0.405	0.31	0.46
Technical certificate/ elementary worker	0.048	0.21	0.063	0.24	0.038	0.19
Technical worker without certificate	0.038	0.19	0.041	0.20	0.037	0.19
Technical worker/ professional secondary	0.12	0.33	0.14	0.347	0.11	0.31
University	0.18	0.38	0.21	0.40	0.16	0.36
Occupation						
Manager	0.11	0.31	0.11	0.31	0.10	0.31
Professional worker	0.11	0.32	0.14	0.34	0.09	0.29
Office worker	0.09	0.30	0.11	0.31	0.09	0.28
Sales worker	0.08	0.27	0.10	0.30	0.07	0.25
Service worker	0.05	0.22	0.06	0.24	0.04	0.20
Production worker	0.55	0.49	0.48	0.50	0.60	0.49
Plant characteristics						
Firm size	32.4	40.3	32.8	39.8	32.3	40.74
Capital intensity	26.45	49.46	23.76	28.6	28.41	60.21
Percentage of women in the workforce	0.37	0.25	0.38	0.25	0.37	0.259
Urban location	0.52	0.49	0.55	0.497	0.51	0.50
High tech sector	0.12	0.33	0.14	0.347	0.113	0.31
Total observations	1725		727		998	

Note: VND stands for Vietnamese Dong, US$1=16,010 (31/12/2007) and 18,465 (31/12/2009).

4.3.2.2 The linkage between export participation and employment quality

4.3.2.2.1 Model specification

To examine the role of export participation on the proportion of casual employment, the empirical specification is kept as close as possible to the work of Were (2011) and is presented as follows: [24]

$$Y_{it} = \beta_0 + \beta_1 \ln(w_{it}) + \beta_2 \ln(Q_{it}) + \beta_3 EX_{it} + \beta_4 X_{it} + u_{it} \quad (3)$$

where dependent variables (Y_{it}) are changes in employment composition. The statistical summary in Table 4.4 shows that the proportion of casual workers averages 9%, a ratio which nearly doubles in the period 2007-09, while the proportion of permanent workers shows a decreasing trend from 93% to 86% in the same period.

With regard to independent variables, export participation is the variable of interest in examining the determinants of the share of casual workers. Average export participation is 6.8% and this index increases in the period 2007-2009. In addition, both average wage and total production output witness a slight increase during the research period. While output is expected to have a positive impact on the share of casual workers, wages are expected to have a negative association with the ratio of irregular employees (Were, 2011).

Attention is also given to other controlled variables. The formal status of firms has been added as an explanatory variable since it is found to have a

[24] The foundation for the theoretical model is set out in Appendix 8.

negative effect on the share of casual workers (Rand and Torm, 2011). According to Rand and Torm (2011), a firm is defined as formal if it has a tax code. In our sample, the average proportion of formal firms is high and it increases from 72% in 2007 to 78% in 2009.

In addition, the share of workers in trade unions and the proportion of women in the workforce are added, based on the argument that they have a significant influence on the change in ratio of irregular workers (Simpson et al., 1997). While an increase in the percentage of employees in trade unions is expected to improve employment quality, a greater female share in the workforce is hypothesized to have a negative effect on the share of casually employed workers. Summary statistics in Table 4.4 show that the proportion is nearly constant in the research period. Furthermore, as discussed by Mangan and Williams (1999), small firms often use casual workers as a means to solve employment shortages, hence firm size as measured by total employment is controlled for in our model.

Moreover, firms tend to use more part-time workers when they face higher competition (Were, 2011). This index has been added in the model by a dummy variable. Finally, the use of casual workers can differ among various industries and locations. As a consequence, the fixed-effects of location and sector are captured by dummy variables in the empirical models.

Table 4.3: Definition and measurement of variables in the casual/permanent employment model

Variables	Definition	Measurement
Dependent variables		
Share of casual workers	The ratio of total casual workers to total employment	Ratio
Share of permanent workers	The ratio of total regular workers to total employment	Ratio
Explanatory variables		
Exporter	1 if firms participate in export markets, 0 otherwise	Dummy variable
Firm size	Total employment	Numbers
Production output	The value of manufactured output	Numbers
Female share	Proportion of women in the workforce	Ratio
Formal status of firms	1 if firms have a tax code, 0 otherwise	Dummy variable
Union percentage	The proportion of employees who are union members	Ratio
Average wage	The ratio of total wage to total employees	Ratio
Level of competition of firms	1 if firms face competition in operation, 0 otherwise	Dummy variable
High tech sector	1 if firm is in high technology sector, 0 otherwise	Dummy variable
Medium tech sector	1 if firm is in medium technology sector, 0 otherwise	Dummy variable
Low tech sector	1 if firm is in low technology sector, 0 otherwise	Dummy variable
Urban dummy	1 if firms operate in Hanoi, Haiphong and Ho Chi Minh, 0 otherwise	Dummy variable
Year 2009	1 if year is 2009, 0 otherwise	Dummy variable

Table 4.4: Summary statistics for the variables in the model of the share of casual workers

Variables	Total		2007		2009	
	Mean	SD	Mean	SD	Mean	SD
Dependent variables						
Casual worker share	0.091	0.186	0.07	0.166	0.11	0.201
Permanent worker share	0.896	0.194	0.93	0.166	0.86	0.21
Explanatory variables						
Exporter	0.068	0.25	0.063	0.24	0.072	0.26
Size	20.1	31.29	20.3	32.52	19.81	30.0
Output in log	5.98	1.43	5.95	1.43	6.01	1.44
Female share	0.33	0.26	0.33	0.267	0.33	0.259
Formal status of firms	0.753	0.43	0.72	0.44	0.78	0.41
Union percent	0.083	0.25	0.083	0.25	0.084	0.259
Average wage in log	1.45	0.67	1.38	0.63	1.53	0.707
Level of competition	0.92	0.25	0.93	0.24	0.92	0.26
Urban location	0.49	0.49	0.49	0.5	0.49	0.5
Number of observations	2988		1494		1494	

4.3.3.2.2 Estimation method

The ratio of casual employment to total employment is a continuous but censored variable. Specifically, the ratio is zero for a substantial proportion of the sample population but a continuous positive value for the rest of the sample population. In this case, the Tobit model is an appropriate strategy (Verbeek, 2004). However, Wagner (2001) indicates that a fractional Logit or Probit model is more suitable than Tobit because by definition, the latter considers the possibility of observing the values of dependent variables between one and zero at the boundaries instead of as a result of censoring. In addition, in the framework of model fractional panel Probit estimates, Papke and Wooldridge (2008) point out that unobserved time-invariant heterogeneity is controlled for by adding time

averages of all explained covariates in a balanced panel dataset. The fractional Probit form is proposed as below:

$$Y_{it} = f(W_{it}, Q_{it}, EX_{it}, X_{it}, \overline{F_i}) \quad (4)$$

where Y_{it} is the ratio of non-regular workers to total employees, $W_{it,}$ Q_{it}, EX_{it}, and X_{it} are defined as in model (13), the export status of firms, X_{it} is a vector of controlled variables that is displayed in Table 4.4, and $\overline{F}_i$ is a set of time averages of explained variables to control for unobserved effects. Using Stata, the above equation is estimated with a GLM (generalized linear models) command. In applying this syntax, as indicated by Papke and Wooldridge (2008), estimation with the "cluster" option is a good way to correct standard errors and makes it possible to deal with potential correlation among error terms. Therefore, clustered robust standard errors are reported in our estimation results.

The fractional Probit panel model has been applied in several empirical studies in the field of export activities (e.g., Eickelpasch and Vogel, 2011; Wagner, 2010). Furthermore, Papke and Wooldridge (2008) showed that this model may be appropriate with short panel datasets (with a large cross-sectional dimension and only a few time periods). Consequently, it is also employed for considering our regressions.

4.4 Empirical results and discussion

This section offers two sets of estimation results. Sub-section 4.4.1 considers the linkage between export participation and wage rates, starting with the basic model and then the extended specification model. Sub-section 4.4.2 presents the linkage between export participation and employment quality.

4.4.1 The linkage between exports and wage differentials

The results reported in Table 4.5 find some evidence that export participation has a positive effect on wages when only firm characteristics are controlled for. The results in columns 1 and 2, Table 4.5, show that on average employees working in exporting plants are paid 9.5% to 22.18% more than those in non-exporting firms, depending on model specification. Interestingly, as reported in column 3, Table 4.5, when firm and worker characteristics are simultaneously controlled for, the effect of exports on wages becomes smaller and statistically insignificant. This finding is in line with the results of Breau and Rigby (2006), who found an insignificant relationship between the decision to export and wage differentials after controlling for both firm and worker characteristics.

Column 4 of Table 4.5 shows spell fixed effect estimation. When time-invariant unobservable factors are controlled for by using spell fixed-effect specification, the estimated coefficient of impact of export participation on wages remains positive but falls further and becomes less statistically significant. This may imply that the unobserved factors that conventional models fail to control for play an important role in the linkage between export participation and wages

Table 4.5: Firm exporting and wage differentials

Dependent Variables / Controlled Variables	Log of average firm-level real monthly wage	Log of individual-level real monthly wage[25]		
	Pooled (2007-2009)	Pooled (2007-2009)	Pooled (2007-2009)	Spell fixed-effect (2007-2009)
Export (yes=1)	0.2218*	0.095+	0.075	0.042
	(0.104)	(0.056)	(0.055)	(0.123)
Size in log	0.1914**	0.086**	0.040*	0.077
	(0.037)	(0.015)	(0.017)	(0.083)
Capital intensity in log	0.1462**	0.021	0.009	-0.012
	(0.029)	(0.014)	(0.013)	(0.028)
Female share	-0.1846	-0.243**	-0.140*	-0.424
	(0.162)	(0.062)	(0.063)	(0.263)
Urban (yes=1)	0.2516**	0.175**	0.136**	
	(0.072)	(0.030)	(0.029)	
High tech sector (yes=1)	-0.0422	-0.009	-0.023	-0.106
	(0.104)	(0.044)	(0.044)	(0.157)
Permanent worker			0.112	0.061
			(0.081)	(0.147)
Worker's age			0.004**	0.007*
			(0.001)	(0.003)
Worker tenure			-0.000	0.004
			(0.003)	(0.008)
Worker's gender			0.147**	0.227**
			(0.022)	(0.047)
No education			-0.357**	-0.388*
			(0.085)	(0.155)
Primary education			-0.311**	-0.041
			(0.068)	(0.098)
Secondary school			-0.246**	-0.023
			(0.051)	(0.114)
High school			-0.187**	-0.060
			(0.047)	(0.082)
Elementary worker			-0.041	-0.093
			(0.056)	(0.126)
Technical worker without certificate			-0.197*	-0.091
			(0.086)	(0.120)
Technical worker with secondary professional training			-0.055	-0.032
			(0.037)	(0.059)
Manager			0.393**	0.416**
			(0.041)	(0.106)
Professional worker			0.105*	0.190*
			(0.046)	(0.080)
Office worker			0.020	0.110
			(0.041)	(0.097)
Sales worker			0.099*	0.142
			(0.040)	(0.095)
Service worker			-0.088*	-0.184+
			(0.042)	(0.104)
Year 2009	-0.1122+	0.068**	0.086**	-0.019
	(0.068)	(0.025)	(0.024)	(0.044)
Constant	5.1639**	6.076**	5.988**	5.921**
	(0.117)	(0.049)	(0.100)	(0.293)
Observations	910	1,725	1,725	1,725
R-squared	0.113	0.142	0.329	0.295

*Notes: Clustered robust standard errors in parentheses, ** p<0.01, * p<0.05, + p<0.1. The base categories for education levels and occupations are university education and production workers respectively.*

[25] The urban dummy is dropped (column 4) since it does not vary with each spell (Andrews et.al, 2006).

Regarding the role of firm-level explanatory covariates in determining wages, pooled data estimations reveal that firm size and the share of women in the workforce have a statistically significant influence on wages. However, while there is a positive nexus between firm size and wages, the share of women in the workforce impacts negatively on wage differences. However, these results change completely when time-invariant unobservable factors are controlled for by using spell fixed-effects estimation. Both the estimated coefficients of the share of women and firm size are statistically insignificant. The results imply that there are unobservable time-invariant factors affecting these relationships. In addition, among other firm-level variables, whereas urban firms tend to pay higher wages than rural firms, in all estimations capital intensity does not affect wage differentials. However, the urban dummy variable is dropped automatically from fixed-effect estimations since it is constant throughout this period.

With regard to the impact of educational level, the results in column 3, Table 4.5, show that the majority of estimated coefficients reveal a statistically significant and negative effect on wage differences when university educational level is considered as a reference category. This implies that stronger wage growth has a close link with a higher educational level. However, the findings from spell fixed-effects estimations indicate that a statistically significant difference is in fact found between employees without education and university graduates, while the influence of other educational categories on wage is statistically insignificant. These results show the importance of controlling for unobservable characteristics. This finding only partly agrees with the empirical results of Larsen et. al (2011). This may be because they fail to control for unobservable factors in their estimations.

Considering another aspect of human capital, while the permanent status of workers impacts positively but insignificantly on wages, employees with more experience gain higher wages. In addition, the role of occupation in determining wages indicates clearly whether unobservable time-invariant factors are controlled for or not. The majority of estimated coefficients of the impact of different occupations on wages are positive since production workers form the base category. Specifically, managers earn a 41.6% wage premium over production workers with a significance of 1 percent.

Finally, gender difference is another factor that has an effect on wages. On average, male workers are paid around 15% to 23% more than their female counterparts, depending on the specification model. This finding is in accord with numerous empirical results of gender pay gap (e.g., Larsen et al., 2011; Milner and Tandrayen, 2007). As explained by Larsen et.al (2011), on the one hand, this wage gap between the sexes may reflect the fact that male workers are more productive than their female counterparts (Hægeland and Klette, 1997)**.** On the other hand, based on a study of the Vietnamese context, it could be explained as discrimination against women in wage payment (Liu, 2004).

4.4.2 Sensitivity analysis

Table 4.6: Sensitivity analysis

Controlled Variables	Dependent variable: log of individual-level real monthly wage			
	Urban	Rural	Low tech industries	Medium & high tech industries
Export (yes=1)	0.109	-0.033	-0.069	0.317*
	(0.251)	(0.148)	(0.145)	(0.144)
Size in log	0.027	0.168+	0.033	0.292**
	(0.138)	(0.089)	(0.119)	(0.103)
Capital intensity in log	-0.019	0.040	-0.007	-0.029
	(0.032)	(0.085)	(0.050)	(0.029)
Female share	-0.214	-0.767*	-0.456	0.002
	(0.433)	(0.326)	(0.393)	(0.194)
Year 2009	-0.044	0.072	-0.036	-0.046
	(0.051)	(0.129)	(0.091)	(0.051)
Constant	5.971**	5.898**	6.153**	5.325**
	(0.378)	(0.456)	(0.394)	(0.363)
Observations	913	812	952	773
R-squared	0.319	0.498	0.329	0.386

Notes: Cluster robust standard errors in parentheses. Models in columns 1 and 2 controlled for permanent worker, age, tenure, gender, education, occupation and high tech. Models in columns 3 and 4 controlled for permanent worker, age, tenure, gender, education, occupation and urban dummy.

In order to explore further the wage differentials between exporters and non-exporters, the dataset has been divided into various sub-groups. As found by Breau and Brown (2011), the effect of export participation on wage levels may differ among the various regions. The model specification above is estimated again for rural and urban areas separately. As can be seen from Table 4.6, export participation has no influence on wage inequality in either rural areas or urban regions. Obviously, these findings indicate that the impact of export participation on wage differentials among employees is not sensitive across different regions.

Furthermore, the role of exporting on wages may also differ in various industry sectors. This derives from the fact that the behaviour of firm exports at various levels of technology is much different in Vietnam (Ministry of Industry and Trade of Vietnam and United Nations Industrial Development Organisation, 2011). Consequently, I explore further the wage differential between exporters

and non-exporters across various levels of technology. Column 3 of Table 4.6, which control for firm and worker characteristics, indicate that export participation does not have a statistically significant impact on wages in low technology industries. However, there is an effect on wages in medium and high technology industries. This suggests that pooling data in Table 4.5 has clouded this effect on wages since the opposite (even statistically insignificant) effect in low technology industries may have cancelled out the overall effect. I could therefore argue that the local treatment effect is more appropriate than the average treatment effect because firm heterogeneity often exists.

4.4.3 The linkage between export participation and the share of casual workers

Another main purpose of this chapter considers the relationship between export participation and the proportion of non-regular workers. As shown in Table 4.7, with regard to the role of export status on the ratio of casual workers, both models reach consensus. Specifically, export participation has a significant, positive relationship with casual employment share and exporters draw on around 7% more casual labour than their non-exporting counterparts. On the one hand, this phenomenon implies that the decision of firms to export may help to solve the labour surplus problem, especially in rural areas. In fact, generating extra income from casual work is a means whereby households gain a higher standard of living (Van de Walle and Cratty, 2004). On the other hand, as indicated by Rand and Torm (2011), the labour contract status held by workers represents the "empowerment" of employees. In this regard, the export activities of firms do not immediately improve the empowerment of workers.

Table 4.7: Fractional Probit model (2007-2009)

Dependent variable: the share of casual workers[26]		
VARIABLES	Pooled	Fixed-effect
	(1)	(2)
Export	0.051**	0.072**
	(0.015)	(0.033)
Size	0.000**	0.001**
	(0.000)	(0.000)
Output in log	0.018**	0.013
	(0.004)	(0.008)
Women share	0.002	-0.051+
	(0.015)	(0.03)
Formal status of firms	-0.02	-0.023+
	(0.012)	(0.013)
Average wage in log	-0.08**	-0.082**
	(0.007)	(0.01)
Competition level	-0.003	-0.013
	(0.014)	(0.018)
Urban dummy	0.001	0.000
	(0.01)	(0.011)
Union percentage	-0.068**	-0.044
	(0.017)	(0.028)
Medium tech sector	0.002	0.044
	(0.007)	(0.028)
High tech sector	0.019	0.043
	(0.016)	(0.031)
Time dummy	0.051**	0.052**
	(0.011)	(0.01)
Observations	2,988	2,988

*Notes: Cluster robust standard errors in parentheses. Fixed-effects model includes the time averages of all explanatory variables. ** p<0.01, * p<0.05, + p<0.1, marginal effects are reported in the results.*

With regard to the effect of formalization on the contract status of employees, the pooled model indicates a statistically insignificant impact of official registration of firms on the share of casual workers.

[26] If using the share of permanent workers as the dependent variable, export participation has a negative impact on the share of permanent workers; The results are presented in Appendix (9).

However, the results change completely when unobservable factors are controlled for in the regression. As presented in column 2 of Table 4.7, firm's formalization status has a negative and statistically significant effect on the share of casual workers. On average, formalization results in a decrease of 2.3% in the proportion of casual workers. This result is in line with the findings of Rand and Torm (2011) about the role of firms' formally registered status on improvement in the quality of employment. Becoming officially registered may encourage firms to be more committed to legal regulation and ready to invest in human capital for their long-term development (Rand and Torm, 2011).

Regarding the role of trade unions in improving employment quality, the pooled estimated results seem to reflect a positive role for trade unions when an increase in the fraction of workers who are members of a union organization results in a reduction in the ratio of non-regular workers. However, the absence of statistically significant influence from these coefficients after controlling for time-invariant unobserved factors may reflect the fact that the role of Vietnamese SME trade union organizations is extremely limited in improving the status of employment contracts. The limited role of union trade organizations may be due to the fact that union officers are staff who hold management positions in private firms (Rand and Tarp, 2011).

Lastly, as reported in column 2 of Table 4.7, there are other factors that bring about change in the ratio of non-regular workers. For instance, a decrease in female share would lead to an improvement in the proportion of casual workers. In addition, while larger firms tend to employ more casual employees, firms with higher average wages tend to employ fewer employees on casual contracts.

Furthermore, with regard to geographical location, a positive but statistically insignificant link between the employment rate of casual workers and the location dummy is also observed. Specifically, there is no difference in casual worker employment between firms in urban and rural regions. Moreover, firms facing competition seem to use fewer casual workers than those who do not. The difference is statistically insignificant, however.

4.4.4 Sensitivity analysis

Considering the full sample data may conceal the impact of export participation on the proportion of casual workers at different technology levels. As discussed previously, firm export behavior is much different at the different levels of technology. Therefore, in order to investigate the above analysis further, the dataset is decomposed into low technology, medium technology and high technology sectors based on the classification of the Vietnamese General Statistics Office (see Appendix 7). As can be seen from column 4, Table 4.8, firms in medium technology industries do not indicate a significant relationship between export participation and the share of casual workers. This seems to reflect the fact that Vietnam is a net importer for the majority of medium-tech products (Ministry of Industry and Trade of Vietnam and United Nations Industrial Development Organisation, 2011).

Table 4.8: Fractional Probit model (2007-2009)

Dependent variable: the share of casual employees					
VARIABLES	Urban	Rural	Low technology	Medium technology	High technology
	fixed-effect	fixed-effect	fixed-effect	fixed-effect	fixed-effect
	(1)	(2)	(3)	(4)	(5)
Export	0.028	0.147**	0.098**	0.099	-0.045*
	(0.03)	(0.041)	(0.039)	0.10	(0.015)
Size	0.000+	0.001**	0.000*	0.001*	0.003*
	(0.000)	(0.000)	(0.000)	0.006	(0.001)
Output in log	-0.001	0.033*	0.019+	0.004	0.015
	(0.006)	(0.014)	(0.01)	(0.013)	(0.017)
Woman share	0.018	-0.113*	-0.054+	-0.019	-0.118
	(0.027)	(0.050)	(0.027)	(0.06)	(0.117)
Formal status	-0.004	-0.031*	-0.014	-0.029	-0.025
of firms	(0.02)	(0.015)	(0.023)	(0.023)	(0.034)
Average	-0.064**	-0.103**	-0.089**	-0.064**	-0.108**
wage in log	(0.012)	(0.017)	(0.012)	(0.013)	(0.025)
Competition	-0.015	-0.016	-0.022	0.015	-0.076
level	(0.024)	(0.029)	(0.038)	(0.025)	(0.047)
Union	-0.056*	0.05	-0.066+	-0.052	0.024
percentage	(0.023)	(0.048)	(0.035)	(0.039)	(0.063)
Medium tech	0.045	-0.017			
sector	(0.031)	(0.04)			
High tech	0.015	0.058			
sector	(0.027)	(0.039)			
Urban			0.007	0.008	-0.039*
dummy			(0.015)	(0.015)	(0.016)
Time dummy	0.048**	0.057**	0.05**	0.05	0.052*
	(0.012)	(0.017)	(0.012)	(0.009)	(0.019)
Observations	1,466	1,522	1,516	1,065	407

*Notes: Clustered robust standard errors in parentheses. Fixed-effects model includes the time averages of all explanatory variables. ** p<0.01, * p<0.05, + p<0.1. Marginal effects are reported in the results.*

Interestingly, whereas there is a positive association between the share of casual workers and export participation in low technology industries, export participation has a negative and statistically significant effect on the share of casual employees in high tech sectors. This may be because export participation helps firms expand market share (Van Biesebroeck, 2005). Consequently, this expansion may allow firms to enlarge their scale of production and result in a

higher demand for labour.[27]

However, a report on Vietnamese industrial competiveness (2011) indicates that the development of skills, learning sophisticated technology and gaining necessary experience for the workforce take a long time for high tech industries. Hence, permanent or long term contracts with employees may be the preferred choice. However, it may require less time to learn the skills and meet the requirements for jobs in low technology sectors such as textiles, clothing, food and beverages. Thus, casual workers are hired more easily when firms need to need an increasing demand from exporting markets.

Columns 1 and 2 of Table 4.8 present the results of the impact of export participation on the share of casual workers in different regions. The sample is divided into urban and rural regions. The results indicate a positive and statistically significant relationship between export participation and the share of workers in urban areas, while an insignificant relationship is observed in rural areas.

[27] To explore this issue, we ran a specification in which the log of employment is a dependent variable regressed on independent covariates that include export status, output, female share, formal status of firms, average wage, competition level, union percentage, an urban dummy, a dummy for high tech sectors, a dummy for medium tech sectors and a dummy for the year 2009. Using this formulation, a positive effect of export participation on the numbers employed was found. These results are displayed in Appendix 5.

4.5 Conclusion and policy implications

Unlike previous studies, this study considers not only the linkage between the export participation-wage difference but also the relationship between export participation and employment quality.

First, the empirical results show that employees in exporting firms are paid more than those in non-exporting enterprises when only firm characteristics are considered. However, the impact of export participation on wages becomes smaller and statistically insignificant when both firm and worker characteristics are included. This effect decreases further when time-invariant unobservable factors are controlled for. The results imply that the role of export status on wages may be exaggerated when worker characteristics and unobservable characteristics are not controlled for. However, we do observe the impact of export participation on wage rates in medium and high tech sectors, suggesting that the impact varies across sectors.

Secondly, the other main contribution of this study is the investigation of the linkage between export participation and the employment contract status of workers. Our findings show that export activities have a positive linkage with the share of non-regular workers. However, the link between export participation and employment quality varies across sectors and locations. While a positive and statistically significant impact of export participation on the share of causal workers is found in the low technology sector, an insignificant relationship is evidenced in medium technology industries. For high tech sectors, export participation has a negative and statistically significant link with the share of casual workers.

Several previous studies indicate that Vietnam has been successful in creating jobs with export-led growth strategies. However, I have presented evidence of a negative link between export participation and the employment quality, especially for low tech sectors. Hence, this may have potential policy implications and suggest that policymakers should pay more attention to improving employment contract status in order to protect workers from the uncertainty of employment contracts, especially in low technology sectors. This in turn helps low skilled workers who are vulnerable to income shocks if they lose their jobs due to unsecure employment contracts.

CHAPTER FIVE: FIRM SURVIVAL AND GROWTH: THE ROLE OF PARTICIPATION IN EXPORTS

5.1 Introduction

Since introducing the renovation policy (Đổi Mới) in 1986, Vietnam has shifted from a centrally planned economy to a market-oriented one. This reform has involved the introduction of a series of policies and legal frameworks, for example, the Private Enterprise law issued in 1990, the Enterprise law of 2000, and especially the promulgation of the Unified Enterprise law in 2005 (Thanh and Anh, 2006). These changes have created the background and paved the way for the development and growth of private enterprise. However, private domestically owned firms still face many constraints on their growth and survival. For example, inequality between private and state firms in the business environment may be the first challenge (Hakkala and Kokko, 2007). Another disadvantage is the lack of accessibility to land (Carlier and Tran, 2004). Furthermore, as indicated by Benzing, Chu, and Callanan (2005), private enterprise faces limited access to capital for growth due to complicated procedures and the preference for state companies.

More importantly, with the deeper integration of Vietnam into the world economy, the inaccessibility of the output market for private domestically owned firms may become the main obstacle for their growth and survival. As revealed by Hakkala and Kokko (2007), Vietnam is a developing country whose domestic consumers have low purchasing power. As a result, this fact becomes a push factor for domestic SMEs to seek opportunities in export markets. There are at

least two reasons why export participation may improve firms' probability of survival and growth.

First, as explained by Wagner (2013), sales in both foreign and home markets may help firms diversify and reduce risk when a negative demand shock from the domestic market occurs. Second, exporters often have a sufficiently high productive level to create enough profits to pay sunk costs and overcome entry barriers to foreign markets (Bridges and Guariglia, 2008). Consequently, exporters may have a higher probability of survival and growth than non-exporters.

However, most private domestic SMEs in Vietnam are small in size and face credit constraints (Rand, 2007). Accordingly, they may not have the financial capability of participating or maintaining their position in the export market. In addition, most do not have appropriate strategies to take advantage of the deeper integration of Vietnam into the global economy (Kokko and Sjöholm, 2005). Furthermore, recent global economic crises have had a negative impact on the survival and growth of firms, especially exporters. As a consequence, participating in export markets may create additional risks for the development of Vietnamese private SMEs.

This argument raises the question as to whether the presence of SMEs in export markets makes them more vulnerable or helps them develop better than their non-exporting counterparts. While the previous chapter has already examined the linkage between export participation and employment benefits, investigating the role of export participation on the survival and growth of firms

will provide insight into the relationship between export activities and firm performance.

To the best of my knowledge, although some empirical studies have looked at determinants of firm survival and growth, these studies have focused mainly on developed countries and none has considered the linkage between changing export status, firm closure and profit growth in Vietnam, especially for SMEs. Thus, this study is the first to consider such a linkage. The empirical results from this study may have potential policy implications. The Vietnamese government encourages firms to participate in the export market as one aspect of export-led growth policies. The empirical results of this study may provide a basis for evaluating the efficiency of these export-promotion strategies.

The remainder of the chapter is in four parts. Section 2 presents a review of the empirical literature relating to the impact of export status on firm growth and survival. Section 3 displays data sources and methodology. Section 4 discusses the empirical results and the sensitivity analysis used to check the robustness of the results. The final section reveals the main findings and discusses some policy implications.

5.2 Literature review

5.2.1 Export status and firm survival

While there are is a large number of studies of the relationship between export status and productivity, evidence of the effect of export participation on firm survival is only starting to emerge. First, some previous empirical studies show that export participation leads to a lower probability of firm failure. For example, Bernard and Wagner (1997) examine the survival characteristics of both exporters and non-exporters in the United States. Based on a Probit estimation, their empirical results show that exporters have a higher survival probability than their non-exporting counterparts.

Similarly, other studies (e.g., Baldwin and Yan, 2011; Bernard and Jensen, 1999) also used Probit estimation and looked at Canadian and United States manufacturing firms. Their empirical results indicated that after controlling for firm and industry characteristics, non-exporters were more likely to exit the market than exporters. However, these studies often use traditional estimations with a Probit or Logit model and may not take into account properly the survival time of firms and the censoring data (Jenkins, 2005).

In another contribution to the literature, adopting a different approach using a survival model, Kimura and Kiyota (2006) answered the direct question of the relationship between export participation and firm survival. Their results also showed that export participation increased the survival probability of Japanese firms. However, a negative relationship between export status and firm survival was observed by Giovannetti et al. (2011) who attributed their finding to strong competition in the export market.

In contrast, some studies found an insignificant relationship between export status and firm survival. For example, the studies of both Alvarez and Görg (2009) and López (2006) concluded that export participation did not have a significant effect on the survival probability of Chilean manufacturing firms. In addition, an insignificant linkage between export participation and firm survival was confirmed by Wagner (2013) for firms in manufacturing industries in Germany in the period 2001-07.

It should be noted that all the above research has focused mainly on the relationship between firm survival and export participation recorded as a dummy variable with the value 1 if firms export and 0 otherwise.

Recent studies consider the relationship between firm survival and exporting status at different stages (exiting exports, beginning exports, and continuing exports).[28] For example, Spaliara and Görg (2009) used a complementary log-log hazard model to test the survival impact of export activities in the case of United Kingdom and French firms. Their results reveal that continuing exporters enjoy a higher probability of survival while firms exiting exports suffer from a lower probability of survival than non-exporters. These results are robust through different specifications and estimations. A similar result is also observed in the empirical study of English manufacturing firms by Harris and Li (2010) who concluded that the majority of continuing exporters have a higher survival probability than non-exporters. In addition, using a dataset from 1990-2002 of Spanish manufacturing firms, Esteve-Pérez et al. (2008) show that not only export

[28] Continuing exporters are firms that export throughout the sample. Beginning exporters are enterprises that do not export in year t-1 but export in year t, while those exiting exports are firms that export in year t-1 but do not export in year t.

participation but also export intensity has a positive effect on the survival probability of SMEs.

In the case of Vietnam, there have been some studies of firm survival. The first was by Vijverberg and Haughton (2004). Using household living standard survey datasets from 1993 and 1997, these researchers examined the determinants of the survival probability of nonfarm household enterprises. The second study considered the impact of government support on firm survival (Hansen et al., 2009). However, these studies use Logit or Probit estimation and do not consider the survival data thoroughly (Jenkins, 2005). A recent study applies survival analysis techniques to examine the linkage between growth of sales and firm survival from 2000-05 (Ha, 2012). However, no study so far has examined the linkage between export activity and the firms' probability of closure.

5.2.2 Exports and firm profitability

An additional interesting question has drawn the attention of some recent studies in international trade. Do exporters with the advantage of higher productivity gain higher profitability or is this advantage absorbed by extra costs relating to trading activities in overseas markets? Among pioneering works, Amendolagine, Capolupo, and Petragallo (2010) carried out a study identifying the impact of export status on the profit rate of manufacturing firms. Covering the years 1995-2003 for Italian manufacturing firms and using a panel dataset with least squares and matching methods, they found evidence that export participation had a positive influence on profit growth.

Fryges and Wagner (2010) also showed that export activity has a positive effect on the profitability growth of German manufacturing firms. However, firms generating 90% or more of their total sales in export markets do not benefit from increased profit rates. They suggested that profitability improvement is the result of learning from exporting. This means that the observed higher productivity of exporters is not completely absorbed by the extra costs of exporting or the higher wages paid by international firms in manufacturing industries (Fryges and Wagner, 2010).

On the contrary, export participation may generate adverse effects on firms' performance in terms of profits. Using a similar methodology (OLS) with panel data in the period from 1986 to 1997 for Japanese manufacturing SMEs, Lu and Beamish (2006) examined profitability growth before and after entry into export markets. Researchers found that firms entering the export market were unlikely to increase their profitability and export participation led to a decrease in profitability. A similar result was also observed for German service companies in the period from 2003-05. However, the difference in profitability between exporters and non-exporters becomes statistically insignificant when controlling for unobserved heterogeneity (Vogel, 2009). More recently, Wagner (2011) and Grazzi (2012) also found a statistically insignificant effect of export participation on firm profitability growth for German and Italian enterprises.

5.2.3 Summary

The role of export participation in a firm's survival seems to be controversial and most investigations have been carried out in developed countries, while all empirical evidence of the effect of export status on profit growth has focused mostly on European countries. With regard to methodology, the studies reviewed often test for differences in profitability performance between exporters and non-exporters at the conditional mean of the outcome distribution (distribution of profitability). However, if firms are heterogeneous, the influence of export participation may be different across points on the outcome distribution (Wagner, 2006). Finally, previous studies often focus on firms in general but a few consider the effect of export participation on the survival and growth of SMEs. The current study is expected to fill this gap by providing the first empirical evidence about the role of export participation on profit growth and firm exit in the Vietnamese domestic SME manufacturing context.

5.3 The data and methodology

5.3.1 The data source

The data used in this chapter is extracted from three surveys of small and medium manufacturing enterprises in 2005, 2007, and 2009. This data set was produced by the Institute of Labour Science and Social Affairs (ILSSA) in collaboration with the Central Institute for Economic Management (CIEM) and Copenhagen University, Denmark.

The dataset has some advantages, as follows. First, as discussed previously, this is a uniquely rich panel dataset of private manufacturing SMEs that covers all the major manufacturing sectors, namely food processing, wood products, fabricated metal products and other sectors. Secondly, these surveys are broadly representative of the Vietnamese entrepreneurial population. Thirdly, the dataset contains the main information on the export status of the enterprise, the number of workers, productive capital, yearly economic indicators, and innovative activities. This makes possible a test of export status on firm survival and growth.

In order to clean the data, we excluded missing values and outliers and checked the consistency of time-invariant variables among the three survey rounds. In addition, since our interest focused on manufacturing industries and SMEs, firms not meeting these criteria were excluded. To calculate the firm survival rate, this study followed the normal procedure employed by previous studies (e.g., Hansen et al., 2009; Nunes and Serrasqueiro, 2011). Specifically, firm identity (ID) is the foundation that allows us to observe the status of firm survival throughout the study period. Firms in 2007 and 2009 that were not surveyed previously in 2005 were excluded from the dataset. As a result, over a period of time I followed 2687 firm observations carried out in 2005. Finally, there were 2144 and 1782 surviving firms in 2007 and 2009 respectively.

A potential problem with time-variant data is that they are often expressed in current prices. Therefore, our data on current variables are deflated to 1994 prices using GDP deflators to avoid bias that might arise because of inflation.

5.3.2 Methodology

5.3.2.1 Model specification of the role of export status on firm survival and growth

To ensure the comparability of the estimated results in the previous stages (1991-2001), the empirical specification of determinants of firm survival and growth is kept as close as possible to the work of Hansen et al. (2009) and is specified as below:

$$Y_{it} = \varphi_0 + \varphi_1 X_{it} + \varphi_2 Z_{it} + \varphi_3 EX_{it} + u_{it} \quad (1)$$

where Y_{it} is the firm survival or profit growth ratio. As revealed by descriptive statistics in Table 5.2 and 5.3, while the firm survival rate increases slightly from 79.8% to 82%, the profit growth rate of firms decreases significantly from 6.7% to -17.6% in the research period.

Among independent variables, X_{it} is a vector of firm characteristics. First, firm size and firm age are included in the model because they represent the differences in efficiency among firms (Jovanovic, 1982). Firms with higher efficiency are assumed to be positively associated with higher survival and growth. Furthermore, firm size and age are also captured in the squared forms in order to consider the nature of non-linear relationships between them and their connection with firm survival and growth**.** It can be seen in Table 5.2 and 5.3 that although firm size is rather stable at around 16 employees, firm age witnessed an increasing trend through the period 2005-09.

In addition, innovative activities by firms, such as the application of new technology and improvement in products, are also considered independent

variables in the model. Based on the theoretical model and empirical findings (e.g., Cefis and Marsili, 2012; Ericson and Pakes, 1995), it is expected that innovators have a higher probability of survival and growth than non-innovators. In the cleaned sample, although the number of firms characterised by innovative activities is rather high (approximately 50%), this index shows a declining trend in the research period.

Following the lead of previous studies, vector Z_{it} includes other characteristics. Ownership types may be an important factor for firm survival and growth (Shiferaw, 2009). To account for this, this study includes a dummy variable of household ownership taking the value 1 and 0 otherwise. The statistical summary in Table 5.2 and Table 5.3 shows that the majority of firms in the sample are household enterprises (nearly 70%).

Further attention is also given to sector characteristics. As argued by Konings and Xavier (2002), different sectors have differences in production technology, customer demand and market concentration, hence sector characteristics may affect the survival and growth of firms differently. This study accounts for these characteristics by adding a low technology sector dummy in the model to compare with firms in high and medium technology industries.

In addition, the location of firms is also considered as one of the independent covariates in the model to capture the fact that provinces in Vietnam are relatively autonomous (Malesky, 2010). To control for the difference among provinces, this study uses a dummy variable taking the value 1 if provinces are in urban regions (Hanoi, Haiphong and Ho Chi Minh) and 0 otherwise.

With regard to the variable of main concern, export participation (EX_{it}) is used as a dummy variable to capture the effect of export activities on firm survival and growth. A positive association is expected between export participation with firm survival and profit growth since exporters are often financially healthier than non-exporters (Greenaway et al., 2007). As displayed in Table 5.2 and 5.3, the export participation of firms throughout the 2005-09 period is small and tends to be stable at around 5%. By investigating the role of export activity further, we also consider export participation at different stages in the linkage with firm growth and survival. According to Sharma and Mishra (2011), I define continuing exporters as firms that export throughout the sample period, whereas beginning exporters are enterprises that do not export in year t-1 but export in year t. Those exiting exporting are firms that export in year t-1 but do not export in year t, and non-exporters are firms that have not exported at all.

Based on recent studies, other independent covariates not controlled for the profit growth equation have also been added to the firm survival model. First, the index of return on assets (ROA), as measured by the ratio of net profit to total assets, has also been incorporated as an independent variable in the model based on a link between the ability of firms to create profits and the probability of failure (e.g., Bridges and Guariglia, 2008; Tsoukas, 2011). In addition, this index is captured in the model since the profitability ratio may stand for the efficiency of firms. Consequently, an increase in this indicator is expected to go together with higher survival prospects for firms (Bunn and Redwood, 2003). As observed in Table 5.2, the ratio increased slightly from 0.231 to 0.31 in the research period. Finally, it is expected that there is a positive linkage between productivity and

firm survival based on the finding that firms with higher productivity gain a higher probability of survival (Shiferaw, 2009). In this study, labour productivity is used. As reported by the descriptive statistics in Table 5.2, productivity level is nearly constant in the study period.

Table 5.1: Definitions and measurement of variables in firm survival and profit growth models

Variables	Definition	Measurement
Dependent variables		
Firm survival	1 if SME is in the market, 0 if has left the market	Dummy variable
Real profit growth	Changes in real profits between t and s (t and s are two adjacent periods)	Ratio
Explanatory variables		
Exporter	1 if firms participate in exporting market, 0 otherwise	Dummy variable
Continuing exporters	1 if SMEs export continuously through the sample, 0 otherwise	Dummy variable
Beginning exporters	1 if SMEs do not export in year t-1 but export in year t	Dummy variable
Exiting exporters	1 if SMEs export in year t-1 but do not export in year t	Dummy variable
Firm size	Total employment	The number of employees
Firm age	The number of years since established	The number of years
Innovation	1 if firms introduced new products, had major improvements in existing products, or introduced new production processes or technology, 0 otherwise.	Dummy variable
Household ownership	1 if ownership is household ownership, 0 otherwise	Dummy variable
Urban location	1 if firm located in Hanoi, Haiphong or Ho Chi Minh, 0 otherwise	Dummy variable
Low tech sectors	1 if firms belong to low technology sectors, 0 otherwise	Dummy variable
Lb	Value added per total employees	Ratio
ROA	The ratio of net profit to total assets	Ratio

Table 5.2: Summary statistics for variables in the firm survival model

Variables	Total		2005		2007	
	Mean	SD	Mean	SD	Mean	SD
Firm survival	0.808	0.394	0.798	0.401	0.820	0.384
Exporter	0.055	0.229	0.059	0.235	0.051	0.22
Continuing exporters	0.026	0.159				
Starting exporters	0.010	0.099				
Exiting exporters	0.019	0.139				
Firm size	16.62	30.48	16.70	31.00	16.51	29.83
Firm age	12.59	9.97	11.55	9.274	13.88	10.65
Innovation	0.582	0.493	0.666	0.471	0.478	0.499
Household ownership	0.697	0.459	0.693	0.461	0.702	0.457
Urban location	0.421	0.493	0.433	0.495	0.404	0.490
Low tech sectors	0.527	0.499	0.504	0.50	0.556	0.496
Lb	12.42	55.69	12.08	73.39	12.83	16.23
ROA	0.266	1.605	0.231	1.387	0.31	1.83
Total observations	4849		2687		2162	

Table 5.3: Summary statistics for variables in the firm growth model

Variables	Total		2005		2007		2009	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Profit growth	-0.028	0.498	0.067	0.645	0.021	0.381	-0.176	0.371
Exporter	0.056	0.230	0.058	0.234	0.051	0.221	0.055	0.229
Continuing exporters	0.019	0.136						
Beginning exporters	0.011	0.104						
Exiting exporters	0.016	0.124						
Firm size	16.57	30.10	16.64	31.09	16.50	29.85	16.57	28.96
Firm age	13.25	10.50	11.63	9.25	13.54	10.62	14.66	11.37
Innovation	0.534	0.498	0.66	0.471	0.479	0.499	0.449	0.497
Household ownership	0.689	0.462	0.699	0.458	0.699	0.458	0.669	0.470
Urban location	0.431	0.495	0.429	0.495	0.429	0.314	0.436	0.496
Low tech sectors	0.548	0.497	0.502	0.50	0.562	0.496	0.583	0.493
Total observations	7612		2645		2462		2505	

5.3.2.2 Method of estimation

5.3.2.2.1 Cloglog (complementary log and log)

The main purpose of this study is to consider the role of export status on firm survival. Firm survival is measured as a dummy variable, and therefore a binary Logit or Probit model framework is used. However, these models may not

cope with survival time data very well in three areas: censoring, time-varying covariates and structural modelling (Jenkins, 2005). As a result, following recent studies of firm failure (e.g., Esteve-Pérez et al., 2008; Spaliara and Görg, 2009), the estimation of our empirical models uses the complementary log-log model. This model is a type of the proportional hazard model which is suitable for discrete data. However, the estimated results can be driven by unobservable heterogeneity (or frailty). As a result, a discrete-time duration model in complementary log-log form with a frailty term distributed normally is estimated in the model.[29]

5.3.2.2.2 OLS estimation and the quantile regression method

OLS estimation is a conventional method for considering the role of export status on firm profit growth (e.g., Fryges and Wagner, 2010; Wagner, 2011). However, the linkage between export participation and firm growth may be affected by unobserved factors. To deal with the problem, a common method is the use of fixed-effect panel data estimations (Wooldridge, 2002). Fixed-effect (FE) regression with panel data can capture unobserved heterogeneity, where these unobservable factors are treated as time-invariant error components (Cameron and Trivedi, 2009)

While the OLS approach estimates the conditional mean of the outcome distribution, the effect might be different across points on the outcome distribution

[29] As shown by Cefis and Marsili (2012), the statistical value of chi-square from the estimation results is used to test a pair of hypotheses. The null hypothesis is that the Rho statistic, defined as "the ratio between heterogeneity variance to one plus the heterogeneity variance," will be equal to zero, while the alternative hypothesis is that the ratio will not be zero. While failing to reject the null hypothesis, Jenkins (2005) shows that the regression results will not be affected significantly by unobserved heterogeneity.

of firms. Buchinsky (1994, p. 453) claims that "'On the average' has never been a satisfactory statement with which to conclude a study on heterogeneous populations." When the outcome distribution of error terms (u_i) is heteroskedastic, the distance of symmetric percentiles (say, the 25th and 75th) from the median is different at any value of X. Therefore, 25th and 75th percentile lines are not parallel to the regression line by the mean approach if the points corresponding to the 25th and 75th percentiles of the conditional outcome distributions are connected.

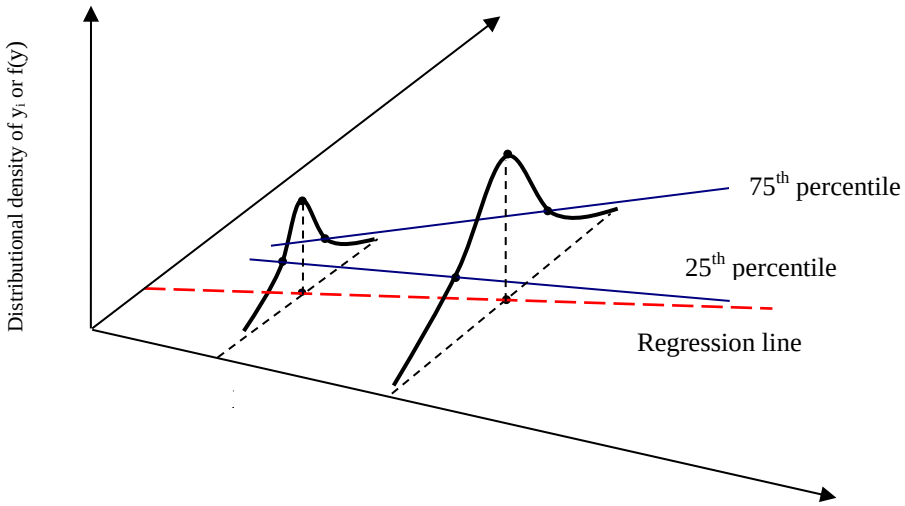

Figure 5.1: Description of the quantile regression

When the normality of residual distributions of each quantile is satisfied, the model specifies the qth – quantile (0< q<1) of conditional distribution of the dependent variable, given a set of variables $X_{i,}$ as follows:

$$Q_q(y_{it} / x_{it}) = a_q + x_{it}.\beta_q + u_{it}.\alpha_q \qquad (2)$$

where y_{it} is the profit growth of firm i through time, x_{it} is a vector of independent variables, including export participation, and covariates for firm and

sector characteristics as discussed in the model specification section, and u_{it} represents unobservable factors such as product quality or management quality. Cameron and Trivedi (2009, p. 207) show that the estimation of equation (1) based on the q^{th} quantile regression is to minimize the absolute residual value with the objective function as below:

$$Q(\beta_q) = \min_{\beta} \sum_{i=1}^{n} \left[\left| y_{it} - x_{it}\beta_q \right| \right] = \min \left[\sum_{i: y_{it} \geq x_i\beta} q \,|\, y_{it} - x_{it}\beta_q \,| + \sum_{i: y_{it} < x_{it}\beta} (1-q) \,|\, y_{it} - x_{it}\beta_q \,| \right] \qquad (3)$$

The QR estimator provides a "much more complete picture" of the relationship between the outcome and independent variables (Koenker and Hallock, 2001). A series of theoretical studies have discussed the problem of capturing unobserved factors through a fixed-effects quantile model (e.g., Canay, 2011; Koenker, 2004). I also follow this approach. According to Canay, the estimation procedure comprises two stages. In the first stage, the conditional mean of u_{it} is estimated. In the second stage, this component is subtracted from the original dependent variable and then the traditional estimation of quantile regression is used. The estimated results from quantile regression are provided with 2000 replicated bootstraps.

5.4 Empirical results and discussion

This section is in two parts. First, the empirical results of the linkage between export status and firm survival are presented in Part 5.4.1. This is followed by Part 5.4.2 that considers the association between export participation and firm profit growth.

5.4.1 The linkage between export status and firm survival

5.4.1.1 Estimates of complementary log-log model without unobserved heterogeneity

Columns 1 and 3, Table 5.4, report estimation results for basic specifications, while the estimation results of the extended specification model are presented in columns 2 and 4.

First, Table 5.4 shows that export participation, the variable of main interest, has a statistically insignificant association with the fates of firms. This result is in contrast with the findings of Esteve-Pérez et al. (2008). However, the picture changes totally when we consider export participation at different stages with the exit probabilities of firms. The difference between continuing exporters, firms exiting exporting, and non-exporters is statistically significant.

Table 5.4: Marginal effects on the linkage between export participation and firm survival[30]

VARIABLES	Cloglog without unobserved heterogeneity	Cloglog without unobserved heterogeneity	Cloglog without unobserved heterogeneity	Cloglog without unobserved heterogeneity
	(1)	(2)	(3)	(4)
Export	-0.0005	-0.0009		
	(0.027)	(0.027)		
Continuing exporters			0.0806**	0.0802**
			(0.029)	(0.029)
Beginning exporters			0.017	0.0162
			(0.057)	(0.057)
Exiting exporters			-0.129*	- 0.1295*
			(0.051)	(0.0508)
Size in log	0.0181*	0.0182*	0.0173*	0.0175*
	(0.007)	(0.007)	(0.007)	(0.007)
Firm size squared	-4.02e-06**	-4.01e-06**	-3.75e-06**	-3.75e-06 **
	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	0.0008	0.0008	0.0008	0.0008
	(0.001)	(0.001)	(0.001)	(0.001)
Firm age squared	0.0000	0.0000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Innovation dummy	0.058**	0.0578**	0.0579**	0.0578**
	(0.012)	(0.012)	(0.012)	(0.012)
Year 2007	0.0233*	0.0229+	0.0168	0.0165
	(0.011)	(0.011)	(0.011)	(0.011)
Household ownership	0.0547**	0.055**	0.056**	0.0571**
	(0.017)	(0.017)	(0.017)	(0.017)
Urban dummy	-0.077**	-0.078**	-0.0757**	-0.0763**
	(0.012)	(0.012)	(0.012)	(0.012)
Low tech sectors	0.0285*	0.0284*	0.0267*	0.0266*
	(0.011)	(0.011)	(0.011)	(0.011)
Labour productivity		0.0000		0.0001
		(0.000)		(0.000)
ROA		0.0007		0.0007
		(0.003)		(0.003)
Observations	4,849	4,849	4,849	4,849

Notes: Robust clustered standard errors in parentheses; statistically significant at 10% (+), at 5% (*), and at 1% (**). The marginal effects of estimated coefficients are reported. The dependent variable is a dummy variable which takes the value of 1 if the SME is in the market and 0 if it has left the market.

Specifically, compared to non-exporters, the regression results indicate that being a continuing exporter provides an 8.1% higher survival probability, while firms ceasing to export have a 12.9% lower survival probability, keeping other

[30] Similar findings about the linkage between export activities and firm survival are also found when using pooled Probit estimation and the results are reported in Appendix 11.

factors constant. These results are in line with the majority of empirical results from other studies and confirm the role of continued exporting in raising the survival probability (e.g., Harris and Li, 2010; Spaliara and Görg, 2009). As claimed by Greenaway et al. (2007)**,** continuing exporters are firms with the best financial health compared to those beginning to export, those exiting exports and non-exporters. However, firms quitting export may be those that lack the financial capability to maintain exporting activities in highly competitive foreign markets. Hence, it is not surprising when continuing exporters have a lower probability of failure but firms quitting export have a higher probability of failure than non-exporters.

Second, considering firm characteristics factors, Table 5.4 shows that there is no relationship between the number of years in business and a firm's probability of closure and that the larger firms have a higher probability of survival than smaller enterprises. In addition, a non-linear and statistically significant relationship between firm size and survival probability is also well established regardless of which model is used. These results partly agree with the empirical results by Hansen et al. (2009).

Third, as expected, innovation activities, such as improvement in existing products and introduction of new products, play an important role in firm survival. This finding confirms the findings from the majority of previous empirical studies (e.g., Cefis and Marsili, 2012). More specifically, estimated coefficients in Table 5.4 show that innovators gain a nearly 6% higher probability of survival than non-innovators, keeping other factors constant. This may be explained by the fact that firms with innovative activities may respond appropriately to changes in market

demand and policies and therefore gain a better chance of survival (Hansen et al., 2009).

Fourth, firms in urban areas have a lower probability of survival than those in rural regions, while firms in low tech industries are subject to a lower probability of failure than their counterparts in medium and high tech industries. This may be because enterprises in rural areas may face a lower level of competition than those in urban regions. In addition, compared to low tech firms, a higher level of competition is likely to exist among firms in medium and high tech industries.

Fifth, Table 5.4 shows that firm productivity and returns on assets have a positive but statistically insignificant association with a firm's probability of survival, while household businesses gain a more than 5% higher survival probability than their counterparts (limited, cooperative, or joint-stock companies), keeping other variables constant. The household firms are often small-scale, hence are flexible in operation and can easily adapt to new contexts and challenges.

5.4.1.2 Sensitivity analysis

Table 5.5: Marginal effects on the linkage between export participation and firm survival

VARIABLES	Cloglog with unobserved heterogeneity	Cloglog with unobserved heterogeneity	Cloglog with unobserved heterogeneity	Cloglog with unobserved heterogeneity	RE- Probit	RE- Probit
	(1)	(2)	(3)	(4)	(5)	(6)
Export	0.0012	0.0006			-0.0001	
	(0.031)	(0.031)			(0.027)	
Continuing exporters			0.1054**	0.1044**		0.088 **
			(0.033)	(0.033)		(0.028)
Beginning exporters			0.0248	0.0236		0.0186
			(0 .066)	(0.065)		(0.056)
Exiting exporters			- 0.1505*	-0.149*		-0.1314*
			(0 .065)	(0.064)		(0.054)
Firm size in log	0.0209*	0.0207+	0.0218*	0.0217*	0.0196*	0.0188*
	(0.010)	(0.0105)	(0.0101)	(0.01)	(0.008)	(0.008)
Firm size squared	-4.45e-06**	-4.40e-06*	-4.53e-06**	-4.49e-06**	-3.90e-06**	-3.71e-06**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Firm age squared	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Innovation dummy	0.0642**	0.063**	0.0683**	0.0679**	0.0597**	0.0601**
	(0.017)	(0.017)	(0.017)	(0.017)	(0.013)	(0.013)
Year 2007	0.0048	0.0066	-0.0197	-0.0182	0.0105	0.001
	(0.039)	(0.038)	(0.039)	(0.038)	(0.031)	(0.031)
Household ownership	0.0624*	0.062*	0.0713**	0.0711**	0.0592**	0.0619**
	(0.024)	(0.023)	(0.024)	(0.024)	(0.019)	(0.019)
Urban dummy	-0.0895**	-0.0889**	-0.0972**	-0.0969**	-0.0827**	-0.0825**
	(0.027)	(0.026)	(0.024)	(0.024)	(0.017)	(0.016)
Low tech sectors	0.0324*	0.032*	0.0333*	0.033*	0.0301*	0.0288*
	(0.015)	(0.015)	(0.015)	(0.015)	(0.012)	(0 .012)
Labour productivity		0.0000		0.0000	0.0000	0.0000
		(0.000)		(0.000)	(0.000)	(0.000)
ROA		0.0008		0.0008	0.0007	0.0007
		(0.002)		(0.003)	(0.0029)	(0.029)
Chi squared	0.30	0.24	1.41	1.32	0.23	0.38
P-value	0.293	0.311	0.118	0.125	0.316	0.269
Observations	4,849	4,849	4,849	4,849	4,849	4,849

Notes: Robust standard errors in parentheses; statistically significant at 10% (+), at 5% (*), and at 1% (**). The marginal effects of estimated coefficients are reported. The dependent variable is a dummy variable which takes the value of 1 if the SME is in the market and 0 if it has left the market.

As argued by Esteve-Pérez et al. (2008), estimated results of the linkage between export participation and firm survival may be strikingly inconsistent when ignoring the effects of unobserved heterogeneity. As a result, the above models have been re-estimated, controlling for unobserved heterogeneity. The

probability of rejecting the null hypothesis is 0.293 and 0.311 respectively in basic models, and 0.118 and 0.125 respectively for the extended model. This means that the null hypothesis cannot be rejected and this result strengthens the confidence that the estimated results in the model are not driven by unobserved heterogeneity.

In the regression results, although there are some small changes in magnitude and signs of coefficients, the majority of the previous set of empirical results remains the same. Considering the role of firm characteristics, the coefficients of size and size squared remain expected signs and statistically significant. While no relationship between firm age and probability of survival is observed, innovators still have a higher probability of survival than non-innovators. With regard to the role of export participation in firm survival, while signs and statistical significances of coefficients are precise as in the set of empirical results in Table 5.4, the magnitude of coefficients is higher when taking into account unobserved heterogeneity in the estimation.

As an additional check on the robustness of results, the relationship between export activities and firm survival in both basic and extended specifications has also been tested using a random effect Probit model capturing unobserved heterogeneity. In Columns 5 and 6, Table 5.5, a similar pattern of the linkage between export participation and firm survival is evident in all cases. In addition, we also observe a similar role for other factors in firm survival. All these findings imply that our estimation results are not sensitive to changes in different regression specifications of estimations.

5.4.2 The linkage between export status and firm profitability

Table 5.6: The OLS regression for the linkage between export participation and profit growth

VARIABLES	Whole sample		Low tech	Medium tech	High tech
	Pooled effect	Fixed-effect	Fixed-effect[31]	Fixed-effect	Fixed-effect
	(1)	(2)	(3)	(4)	(5)
Export	-0.0248	0.0558	0.0905	-0.0253	-0.0289
	(0.035)	(0.059)	(0.082)	(0.118)	(0.119)
Firm size in log	0.0165*	0.0525**	0.0874**	0.0509+	0.0029
	(0.008)	(0.015)	(0.022)	(0.029)	(0.038)
Firm size squared	0.0000	0.0000	-0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	-0.0104**	-0.0056+	-0.0009	-0.0178**	0.0090
	(0.002)	(0.003)	(0.005)	(0.006)	(0.006)
Firm age squared	0.0002**	0.0001+	0.0000	0.0003**	-0.0001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Innovation dummy	0.0263*	0.0090	0.0135	0.0032	-0.0572
	(0.011)	(0.015)	(0.022)	(0.028)	(0.045)
Year 2009	-0.2125**	-0.2325**	-0.2244**	-0.2102**	-0.2982**
	(0.011)	(0.012)	(0.017)	(0.023)	(0.037)
Household	-0.0713**	-0.0089	0.0163	0.0042	-0.0878
ownership	(0.019)	(0.041)	(0.083)	(0.061)	(0.067)
Urban dummy	-0.0191+	-2.3923**		-2.5235**	
	(0.011)	(0.065)		(0.089)	
Low tech sectors	0.0225*	0.0877**			
	(0.011)	(0.031)			
Constant	0.1290**	0.9728**	-0.1387+	1.3703**	0.0441
	(0.032)	(0.064)	(0.077)	(0.106)	(0.108)
Observations	7,612	7,612	4,175	2,392	1,045
R-squared	0.068	0.094	0.091	0.095	0.152

Notes: *Robust cluster standard errors in parentheses; statistically significant at 10% (+), at 5% (*), and at 1% (**). Dependent variable is profit growth.*

[31] The urban dummy in columns 3 and 5 is dropped automatically since it does not vary in each group (Andrews et.al, 2006).

Table 5.7: Export participation and profit growth

VARIABLES	Fixed-effect quantile regression								
	q10	q20	q30	q40	q50	q60	q70	q80	q90
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Export	-0.0856+	-0.0395	-0.0203	-0.0182	-0.0059	0.0159	0.0526*	0.0865*	0.0551
	(0.050)	(0.029)	(0.015)	(0.016)	(0.019)	(0.021)	(0.024)	(0.035)	(0.040)
Size in log	-0.0123	0.0096+	0.0166**	0.0224**	0.0228**	0.0248**	0.0318**	0.0416**	0.0479**
	(0.009)	(0.006)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.010)
Firm size squared	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	-0.0079**	-0.0071**	-0.0059**	-0.0065**	-0.0061**	-0.0060**	-0.0066**	-0.0077**	-0.0107**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Firm age squared	0.0001**	0.0001**	0.0001**	0.0001**	0.0001**	0.0001**	0.0001**	0.0001**	0.0002**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Innovation	0.0167	-0.0036	0.0033	0.0027	0.0086+	0.0152*	0.0181**	0.0224**	0.0342*
dummy	(0.012)	(0.008)	(0.007)	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.015)
Year dummy	-0.1877**	-0.1931**	-0.1875**	-0.1767**	-0.1749**	-0.1821**	-0.1894**	-0.2026**	-0.2348**
	(0.012)	(0.008)	(0.007)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)	(0.013)
Household	0.0147	-0.0109	-0.0216*	-0.0245**	-0.0303**	-0.0466**	-0.0639**	-0.0933**	-0.1638**
ownership	(0.019)	(0.014)	(0.009)	(0.008)	(0.007)	(0.009)	(0.009)	(0.014)	(0.028)
Urban dummy	-0.0603**	-0.0629**	-0.0510**	-0.0338**	-0.0210**	-0.0159**	-0.0129*	-0.0093	0.0063
	(0.012)	(0.009)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)	(0.016)
Low tech sectors	0.0488**	0.0327**	0.0210**	0.0147**	0.0137**	0.0142*	0.0105+	0.0039	-0.0070
	(0.012)	(0.008)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.013)
Constant	-0.1887**	-0.0789**	-0.0316*	0.0074	0.0396**	0.0850**	0.1437**	0.2290**	0.4259**
	(0.029)	(0.019)	(0.015)	(0.012)	(0.011)	(0.013)	(0.014)	(0.022)	(0.037)
Observations	7,612	7,612	7,612	7,612	7,612	7,612	7,612	7,612	7,612

*Notes: Bootstrap standard errors in parentheses with 2000 replications; + significant at 10%; * at 5%; ** at 1%.*

Table 5.8: Other exporting status and firm profit growth

VARIABLES	OLS	Fixed-effect quantile regression								
		q10	q20	q30	q40	q50	q60	q70	q80	q90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Continuing	-0.0614	-0.1561	-0.1338+	-0.0663+	-0.0733+	-0.0124	0.0138	0.0219	0.0719	-0.0089
exporters	(0.062)	(0.109)	(0.076)	(0.039)	(0.043)	(0.050)	(0.050)	(0.063)	(0.080)	(0.113)
Beginning exporters	-0.0431	-0.0261	-0.0433	-0.0455+	-0.0569+	-0.0431+	-0.0383	0.0124	0.0009	-0.0630
	(0.046)	(0.067)	(0.035)	(0.026)	(0.033)	(0.025)	(0.046)	(0.050)	(0.053)	(0.072)
Exiting exporters	-0.1112	-0.1684	-0.0644	-0.0516	-0.0222	-0.0270	-0.0264	0.0382	0.0192	0.0012
	(0.071)	(0.112)	(0.096)	(0.042)	(0.036)	(0.031)	(0.054)	(0.058)	(0.057)	(0.077)
Size in log	0.0176*	-0.0127	0.0100+	0.0178**	0.0236**	0.0235**	0.0263**	0.0329**	0.0433**	0.0552**
	(0.008)	(0.009)	(0.006)	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.011)
Firm size squared	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	-0.0104**	-0.0080**	-0.0070**	-0.0059**	-0.0065**	-0.0060**	-0.0060**	-0.0066**	-0.0078**	-0.0112**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Firm age squared	0.0002**	0.0001**	0.0001**	0.0001**	0.0001**	0.0001**	0.0001**	0.0001**	0.0001**	0.0002**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Innovation dummy	0.0262*	0.0157	-0.0047	0.0046	0.0024	0.0097*	0.0168**	0.0195**	0.0234**	0.0314*
	(0.011)	(0.012)	(0.008)	(0.007)	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.015)
Year dummy	-0.2125**	-0.1882**	-0.1941**	-0.1861**	-0.1761**	-0.1735**	-0.1818**	-0.1894**	-0.2018**	-0.2317**
	(0.011)	(0.012)	(0.009)	(0.008)	(0.006)	(0.005)	(0.005)	(0.006)	(0.007)	(0.013)
Household	-0.0724**	0.0154	-0.0110	-0.0233*	-0.0248**	-0.0298**	-0.0452**	-0.0662**	-0.0955**	-0.1646**
ownership	(0.019)	(0.018)	(0.014)	(0.009)	(0.008)	(0.007)	(0.009)	(0.009)	(0.015)	(0.027)
Urban dummy	-0.0190+	-0.0622**	-0.0611**	-0.0511**	-0.0334**	-0.0201**	-0.0150*	-0.0135*	-0.0102	0.0043
	(0.012)	(0.012)	(0.009)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)	(0.017)
Low tech sectors	0.0235*	0.0493**	0.0338**	0.0233**	0.0150**	0.0138**	0.0148**	0.0132*	0.0047	-0.0011
	(0.011)	(0.012)	(0.008)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.014)
Constant	0.1276**	-0.1874**	-0.0804**	-0.0338*	0.0051	0.0363**	0.0813**	0.1419**	0.2277**	0.4191**
	(0.032)	(0.028)	(0.019)	(0.015)	(0.012)	(0.011)	(0.013)	(0.013)	(0.022)	(0.036)
Observations	7,612	7,612	7,612	7,612	7,612	7,612	7,612	7,612	7,612	7,612

*Notes: Bootstrap standard errors in parentheses with 2000 replications; + significant at 10%; * at 5%; ** at 1%. OLS standard errors are robust.*

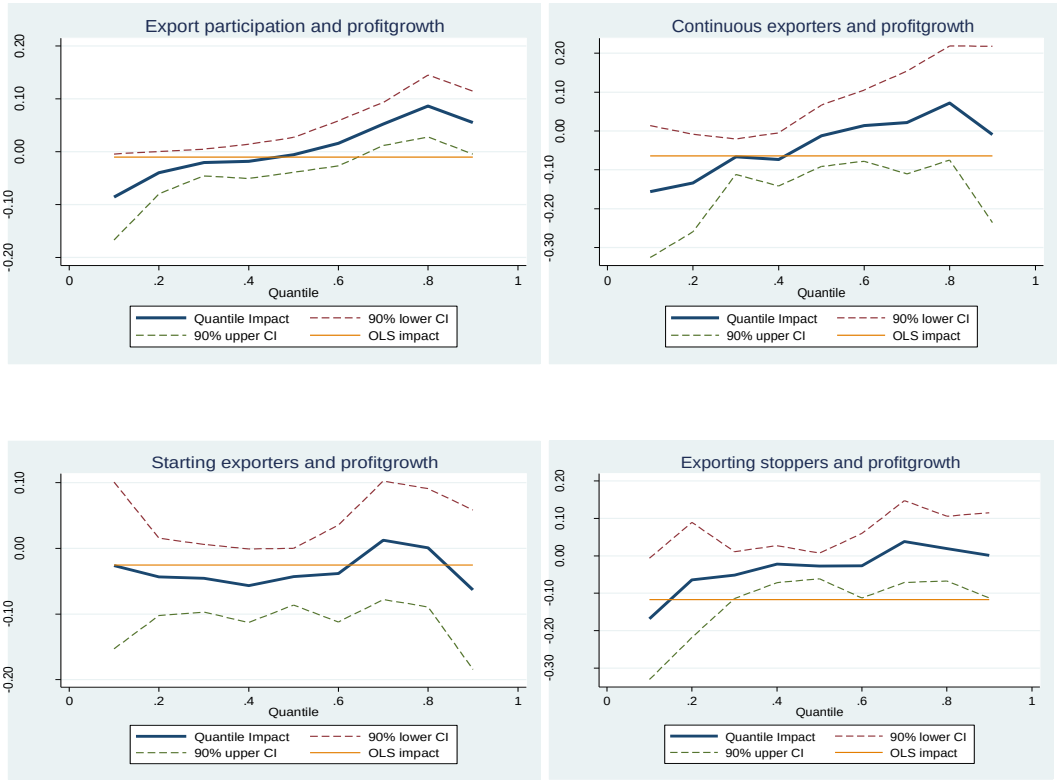

Figure 5.2: Slope and 90% coefficient intervals for quantile treatment regression

Another focus of this study is to examine the role of export activities on firm profit growth. As displayed by column 1 of Table 5.6, there is a statistically insignificant difference in profit growth between exporters and non-exporters. These results are also confirmed by using fixed-effect estimation controlling for unobserved heterogeneity (column 2, Table 5.6). In addition, as discussed previously, firm export behaviour is much different depending on technology level (Ministry of Industry and Trade of Vietnam and United Nations Industrial Development Organisation, 2011). Hence, the linkage between export participation and firm profit growth is re-examined in each sub-group with regard to the various technology levels. The results of columns 3, 4 and 5, Table 5.6, also

show that there is insignificant linkage between export participation and profit growth.

Similar results have also been found when using export participation at different stages in the linkage with profit growth. As displayed by column 1 of Table 5.8, firms exiting exports have a negative relationship with firm profit growth, whereas there is a positive association between firm profit growth and continuing exporters. In all cases, however, the estimated coefficients are statistically insignificant.

Usage of the above ordinary least squares (OLS) may cloud the role of export activities in firm profit growth at different points, since this linkage may be heterogeneous across residual distribution of profit growth. Hence, the association between export activities and firm profit growth is re-investigated using the quantile treatment approach.

A totally different picture emerges when using quantile regression. As displayed by Tables 5.7, 5.8 and the graphs in Figure 5.2, there is a positive relationship between export participation and profit growth at the 70^{th} and 80^{th} percentiles, but a negative linkage is observed between export participation and profit growth with enterprises having low profit growth at the 10^{th} percentile. These results imply that at different points the average approach has clouded the role of export activities in firm profit growth. The findings here suggest that productivity advantages of exporters compared with non-exporters are realised for firms having high profit growth in the 70^{th} and 80^{th} percentiles. For firms with low profit growth in the 10^{th} percentile, these advantages are possibly absorbed by

costs relating to trading activities in overseas markets such as entry and advertisement costs.

Thus our results reconcile the mixed findings of previous studies reported in the literature (see the literature review for more details of mixed findings). With regard to other exporting activities, Table 5.8 shows that while an insignificant linkage between firms exiting exports and firm profit growth is exhibited, there are some significant, negative links between firms having low profit growth with continuing and beginning exporters (for example at the 30^{th} and 40^{th} percentiles). The role of export activities in firm profit growth is further demonstrated using the confidence intervals as shown in Figure 5.2.

Regarding firm characteristics, Table 5.6 shows that the effect of firm age and size are reflected clearly in the regression results. Larger firms enjoy higher profit growth but older firms have a negative association with firm profit growth. Specifically, each year in business is associated with a decrease of 0.5% in firm profit growth, whereas a 1% increase in size is accompanied by nearly 6% growth in profit, keeping other factors constant. A positive association between firm size and firm profit growth contrasts with the findings of Fryges and Wagner (2010). However, this result may be attributed to the fact that larger-sized firms may raise funds more easily, have economies of scale and are in a better position to recruit qualified human resources than their smaller counterparts (Esteve-Pérez et al., 2008). A negative linkage between age and firm profit growth is in line with the majority of the previous empirical results and reflect the fact that when firms become mature, their growth seems to slow down (Nguyen and van Dijk, 2012).

In addition to the firm characteristics covariates, the role of innovation and types of ownership in firm profit growth show the same pattern. Column 1 of Table 5.6 indicate that there is a statistically significant difference in profit growth between innovators and non-innovators, and that household enterprises have a lower profit growth than their counterparts. However, when controlling for unobserved heterogeneity, the absence of statistically significant coefficients for the relationship between the growth of firms with innovation and the household dummy suggests that the impact of these variables on firm profit growth is driven by unobserved factors.

As expected, the year 2009 dummy has a negative and statistically significant impact on firm profit growth. As reported by column 2 of Table 5.6, the growth of firm profit in 2009 declined significantly, approximately 23%, in comparison with previous years, keeping other factors constant. It can be argued that the global financial crisis in this period might have had a negative impact on the development of firms in general and SMEs in Vietnam in particular.

5.5 Summary and policy implications

In an attempt to contribute to a small but growing amount of empirical evidence concerning the determinants of SME survival and growth, this study provides the first evidence of the role of export activities on SME survival and growth. Based on the empirical results, some main findings may be summarized as follows.

Regarding traditional firm characteristics factors, the empirical results are generally consistent with other international empirical studies. For example, larger firms have a higher probability of survival and growth than their counterparts. In addition, firm age has a negative association with profit growth but not with the probability of firm survival. Furthermore, it is not surprising that innovators who have flexible policies are able to respond quickly to market demand and are marked by a higher probability of survival than non-innovators. However, the study finds no evidence of a difference in profit growth between innovating and non-innovating firms.

Considering other characteristics, while firms in low-tech industries are found to have a higher probability of survival and profit growth than firms in high and medium technologies, the results indicate that there is no evidence of a significant linkage between productivity and firm survival probability.

With regard to the connection between export participation and firm profit growth, estimates of the ordinary least squares (OLS) indicate that there is no linkage between the two. However, quantile treatment effects estimates reveal that export participation has a positive association for those firms with high profit

growth at the higher quantiles but a negative link with low profit growth for those firms at the lower quantiles. This suggests that the role of export activities on firm profit growth varies at different points of profit growth distribution.

Finally, our micro-econometric analysis indicates that while there is no difference in survival probability between exporters and non-exporters, export activities at different stages have varying effects on the probability of firm failure. Specifically, there is a positive and statistically significant association between continuing exporters and firm survival probability, whereas a positive relationship is observed between firms exiting exports and the probability of failure of these firms.

Regarding policy implications, changes in the exporting status of firms are accompanied by an improvement in profit growth and the survival probability of firms. This suggests that export promotion policies (e.g., improvement in innovation activities and the productivity of firms) and policies helping to maintain exporting activities through time could be effective since they may help firms improve the growth in profitability and reduce the probability of failure.

CHAPTER SIX: CONCLUSION

This thesis is an empirical study of factors impeding export participation of non-state domestic manufacturing SMEs, and the effect of export participation on employee benefits and firm performance. The main results and contributions of the thesis are summarized below.

The factors hindering SMEs from taking part in export activities and the role of export participation for productivity and its decomposition are the main focus of Chapter 3. This chapter answers these questions in the Vietnamese SME context by investigating two popular hypotheses, self-selection and learning by exporting. The research results show that higher productivity among exporters stems from self-selection rather than by a learning by exporting mechanism. This suggests that productivity is one of the main factors hindering the entry of firms into the export market, and hence, productivity improvement can help firms participate into exporting market.

In addition, the empirical results indicate that other firm characteristics variables have a close link with the decision to export. Firm size, as defined by the total number of employees, has a positive association with export participation along with innovation activity. Furthermore, SMEs which have a long-term relationship with foreign partners show a higher probability of exporting than those without such a relationship. Based on the empirical results, this chapter suggests that improvement in firms' innovation activity and development as well as the maintenance of a network with foreign partners can increase the likelihood of a firm engaging in exporting.

To test the learning by exporting hypothesis, this study used a Stochastic Frontier Production Function approach to decompose the growth productivity into technical efficiency, technical change efficiency and scale efficiency. The empirical results indicated no linkages between export participation and productivity growth and its decomposition when using both fixed-effect and fixed-effect instrumental variable estimations. Thus there is no evidence of learning by exporting.

Chapter 4 examined the effect of export participation on employee benefits first through wages and secondly in employment quality. First, the results show that workers in exporting firms are paid more than those in non-exporting firms when only firm characteristics are controlled for but that the wage export premium decreases further and becomes statistically insignificant when both firm and worker characteristics are considered. This effect decreases further when controlling for unobservable characteristics by using spell fixed effects. The results suggest that the effect of exports on wages shows an upward trend when worker and unobservable characteristics are not considered as they have been in previous studies.

However, the existence of an exporter wage premium is observed in the medium and high technology sectors. This implies that where firm heterogeneity exists, the local treatment effect is more appropriate than the average treatment effect. Furthermore, this chapter's findings indicate that worker attributes such as education, experience, gender and occupation determine wage premium. In general, workers with more experience, higher education and higher occupations are paid more than their counterparts.

In the second part of Chapter 4, the linkage between firm exporting and employment quality was explored. It was found that, on average, exporters have a larger share of casual workers than non-exporters. However, the role of export participation on employment quality varies greatly with respect to levels of technology. While a negative linkage between export participation and employment quality is observed in low technology sectors, the relationship is reversed for the high technology sectors. Based on the empirical results, this chapter proposes some potential policy recommendations for policymakers. Exporting may not only have a positive linkage with employment growth but also a negative relationship with employment quality. Hence, these results may indicate that policymakers should pay more attention to improving workers' employment contract status to protect them from the uncertainty of employment contracts, especially in the low technology sectors.

The impact of export participation on firm performance was investigated in Chapter 5. As in Chapter 4, this chapter considers the role of export participation on firm performance through two channels. The first is the linkage between export performance and firm survival, as measured by a dummy variable. The study shows that while export participation does not have a significant relationship with firm survival, other exporting activities have a significant relationship. Specifically, continuing exporters have a positive linkage with the probability of firm survival, while firms ceasing export activity have a negative linkage with firm survival. This implies that government policies (e.g., encouraging firms' innovative activities) not only help firms participate in export activities but also

maintain their export activities, and this in turn improves the probability of their survival.

This chapter also provides additional evidence that while firm age does not have a linkage with firm survival, larger firms have a higher survival probability. In addition, innovators show a higher survival probability than non-innovators. This result implies that encouraging firms to invest in innovative activities may help them gain a higher probability of survival.

The second linkage investigated is between export and profitability growth. As reviewed in Chapter 5, although linkages between export and productivity have been investigated intensively, only a few studies have investigated the linkage between exports and profitability. All have focused mostly on the European countries and used a mean approach, resulting in mixed findings. Using ordinary least squares (OLS), the empirical results from my study show an insignificant linkage between export status and firm profit growth. However, when using a quantile approach, export participation is found to be positively related to profitability for those firms with high profit growth but negatively related for those firms with low profit growth. These results reflect movement towards reconciling the mixed findings of previous results in the literature. In addition, the results might suggest that the productivity advantages of exporters with low profit growth are absorbed by costs relating to trading activities in overseas markets.

This study has contributed to the understanding of determinants of export participation and its role as it affects the performance of non-state manufacturing SMEs as well as their workers but it still has some limitations that offer

opportunities for future study. First, as indicated in Chapter 3, using export performance as a dummy variable minimizes measurement errors but it does not make allowance for the degree of export participation. However, data on export intensity was not available in 2007, and hence did not allow for conducting a panel regression. Furthermore, the inclusion of the indicators of firms ceasing export activity, beginning to export, and firms continuing as exporters is interesting. Firms could have switched their status from exiting export to beginning exporting then back to exiting exports within the 2-year data gap but this was not evident in the data.

Second, this thesis has focused mostly on the export activities of firms. Other kinds of international participation such as foreign direct investment, off-shoring and import status have been left unexplored due to the limitations of the data. It is hoped that greater data availability will allow future studies to contribute additional understanding of Vietnamese international business activity.

Finally, this study focuses only on domestic non-state manufacturing SMEs in Vietnam. With the availability of comparable data, future work could consider large firms, firms in other ownership categories such as SOEs and FIEs, and firms in other economic sectors such as services or agriculture in order to provide a broader understanding of the export performance of Vietnamese enterprises.

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APPENDICES

Appendix 1: Provinces covered in the survey data

Source: Rand (2009)

Appendix 2: Determinants of export participation

Random Probit[32]

VARIABLES	Export	Export	Export	Export	Export
	(1)	(2)	(3)	(4)	(5)
$Export_{(t-1)}$	1.1285**	1.1409**	1.1304**	1.1302**	1.1302**
	(0.170)	(0.171)	(0.170)	(0.170)	(0.170)
Levin & Petrin $TFP_{(t)}$	0.0021**				
	(0.001)				
Stochastic frontier $TFP_{c\,(t)}$		1.4792**			
		(0.351)			
$Lb_{(t)}$			0.0027*		
			(0.001)		
$TFP_{(t-1)}$				-0.0000	
				(0.000)	
$Lb_{(t-1)}$					-0.0001
					(0.001)
Firm age $_{(t-1)}$	-0.0076	-0.0072	-0.0076	-0.0077	-0.0077
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Firm size $_{(t-1)}$	0.0038**	0.0045**	0.0041**	0.0041**	0.0041**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Capital intensity $_{(t-1)}$	-0.0001	-0.0000	-0.0001	-0.0000	-0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade link $_{(t-1)}$	0.7577**	0.7767**	0.7554**	0.7518**	0.7523**
	(0.216)	(0.217)	(0.216)	(0.216)	(0.216)
$Average\ wage_{(t-1)}$	0.0018	-0.0021	0.0023	0.0032	0.0033
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Credit constraint $_{(t-1)}$	0.1139	0.1207	0.1167	0.1128	0.1130
	(0.143)	(0.144)	(0.142)	(0.142)	(0.142)
$Government\ support_{(t-1)}$	-0.0325	-0.0620	-0.0307	-0.0344	-0.0346
	(0.105)	(0.107)	(0.105)	(0.105)	(0.105)
$innovator_{(t-1)}$	0.1818+	0.1726	0.1843+	0.1872+	0.1873+
	(0.109)	(0.110)	(0.109)	(0.109)	(0.109)
Urban dummy	0.1203	0.1065	0.1285	0.1485	0.1488
	(0.104)	(0.104)	(0.104)	(0.103)	(0.103)
Joint-stock ownership	0.7335**	0.5865*	0.7544**	0.7651**	0.7653**
	(0.247)	(0.254)	(0.247)	(0.247)	(0.247)
Private ownership	0.5856**	0.5194**	0.5995**	0.6155**	0.6158**
	(0.119)	(0.120)	(0.118)	(0.117)	(0.117)
Partnership ownership	0.7295**	0.6425**	0.7359**	0.7284**	0.7280**
	(0.218)	(0.220)	(0.217)	(0.217)	(0.217)
Low tech sectors	0.2126*	0.1943*	0.2061*	0.1912*	0.1907*
	(0.096)	(0.096)	(0.096)	(0.095)	(0.095)
Year 2009	0.1616+	0.2432*	0.1638+	0.1687+	0.1688+
	(0.096)	(0.098)	(0.095)	(0.095)	(0.095)
Constant	-2.6333**	-2.8429**	-2.6393**	-2.6100**	-2.6092**
	(0.167)	(0.178)	(0.167)	(0.165)	(0.165)
Observations	3,328	3,328	3,328	3,328	3,328
Chi squared	1.1e-04	9.7e-05	1.1e-04	1.1e-04	1.1e-04
P-value	0.496	0.496	0.496	0.496	0.496

Standard errors in parentheses; (**),(*), and ($^{+}$) indicate levels of significance at 1%, 5% and 10% respectively. The estimated coefficients are reported.

[32] As shown by Cefis and Marsili (2012), the statistical value of Chi-square from the estimation results is used to test a pair of hypotheses. The null hypothesis is that the "Rho" statistic, defined as "the ratio between heterogeneity variance to one plus the heterogeneity variance," will be equal to zero, while the alternative hypothesis is that the ratio will not be zero. While failing to reject the null hypothesis, Jenkins (2005) shows that the regression results will not be affected significantly by unobserved heterogeneity. The probability of rejecting the null hypothesis is 0.496. This means that the null hypothesis cannot be rejected and the estimated results in the model are not driven by unobserved heterogeneity.

Appendix 3: Stochastic production frontier estimation

Variables	Cobb-Douglas		Translog	
	Coefficients	SEs	Coefficients	SEs
lnK	0.157	0.007	-0.0130	0.025
lnL	1.003	0.012	1.0632	0.047
T	0.116	0.022	0.0959	0.081
$(lnK)^2$			0.0095	0.003
$(lnL)^2$			-0.0462	0.009
T^2			-0.0291	0.018
lnK*lnL			0.0191	0.008
lnK*t			0.0187	0.007
lnL*t			0.0188	0.012
Constant	1.993	0.073	2.3832	0.117
σ^2	0.550	0.022	0.5380	0.019
γ	0.374	0.026	0.3797	0.017
μ	0.907	0.080	0.9039	0.061
η	-0.059	0.027	-0.0627	0.022
Log-likelihood value	-5144.43		-5102.7	
Obs. Number	4992		4992	

Appendix 4: Hypothesis testing

Null hypothesis	Log-likelihood	Test Statistics (λ)	Critical value* 1%	5%	Decision
I. Cobb-Douglas					
H_0: $\beta_{ll}=\beta_{lk}=\beta_{kk}=\beta_{tt}=\beta_{lt}=\beta_{kt}=0$	-5144.43	83.46	16.81	12.59	Reject H_o
II.No technical inefficiency effects					
H_0: $\gamma = 0$	-5112.5	432.527	10.51	7.045	Reject H_o

* Critical values for these tests are taken from Table 1 of Kodde and Palm (1986)

The hypothesis (I) assumes that SMEs follow the Cobb-Douglas production function. Thus, the hypothesis is tested by using the likelihood-ratio test statistic (λ) that is defined as $\lambda = -2[L(H_0) - L(H_1)]$. In this formula, $L(H_o)$ and $L(H_1)$ are the log-likelihood value of a restricted (Cobb-Douglas) and unrestricted (Translog) frontier model, respectively. The above Table reports that specification of the Cobb-Douglas functional form is rejected because the value of the λ statistic in the first row greatly exceeds critical value. This indicates that the Translog function is the appropriate choice for our data.

The value of the test hypothesis is reported automatically as “LR test of the one-sided error” in Frontier 4.1 and is used to test the hypothesis (II). The examination of the significance of technical efficiency effects is also strongly rejected, implying that using OLS or average production function estimation will underestimate the actual frontier because of the existence of technical inefficiency.

Appendix 5: Estimation TFP using Levinsohn-Petrin methodology

In previous studies, the Levinsohn-Petrin approach is a popular method in productivity measurement because of its advantages in controlling for the endogeneity of input factors. In this research, total value added is used as the output while input factors are made up of the capital variable proxied by the value of machinery, equipment, buildings for production, and the labour variable measured by the total number of employees. The proxy variables are raw material and electricity costs that stand for unobservable shocks. All variables with current prices are deflated by the deflator GDP index in 1994. In addition, all variables in the regression model are employed in natural logarithmic forms. The Levpet program in Stata written by Levinsohn-Petrin (2003) with 250 time bootstrap replication is used to estimate productivity.

Appendix 6: The impact of export participation on productivity growth and its decomposition according to technology levels

Fixed-effect panel data results

VARIABLES	TFPc			TPc			TEc			SEc		
	Low tech	Medium tech	High tech	Low tech	Medium tech	High tech	Low tech	Medium tech	High tech	Low tech	Medium tech	High tech
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Export	-0.0016	0.0274	-0.0295	-0.0015	0.0009	-0.0025	0.0000	-0.0000	-0.0000	-0.0001	0.0265	-0.0270
	(0.017)	(0.034)	(0.040)	(0.003)	(0.005)	(0.008)	(0.000)	(0.000)	(0.000)	(0.016)	(0.030)	(0.034)
Firm size	0.0094**	0.0111**	0.0110**	0.0012**	0.0015**	0.0015**	-0.0000	0.0000	-0.0000	0.0082**	0.0096**	0.0095**
	(0.001)	(0.001)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)
Firm size	-0.0000**	-0.0000**	-0.0000**	-0.0000**	-0.0000**	-0.0000**	0.0000+	0.0000	0.0000	-0.0000**	-0.0000**	-0.0000**
squared	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	0.0004	0.0003	0.0024	0.0001	-0.0002	0.0000	0.0000	0.0000+	-0.0000	0.0003	0.0005	0.0024+
	(0.000)	(0.001)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Average wage	0.0013	0.0040*	-0.0007	0.0005	0.0013**	0.0002	0.0000**	0.0000	0.0000*	0.0009	0.0027	-0.0009
	(0.001)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.002)
Innovation	0.0015	-0.0123	0.0146	0.0014	-0.0018	0.0064+	0.0000	-0.0001	0.0001	0.0000	-0.0104	0.0082
dummy	(0.009)	(0.010)	(0.020)	(0.002)	(0.002)	(0.004)	(0.000)	(0.000)	(0.000)	(0.008)	(0.008)	(0.018)
Household	0.0058	-0.0120	0.0377	-0.0050	-0.0093	-0.0034	-0.0001	-0.0001+	0.0002*	0.0108	-0.0025	0.0409
ownership	(0.022)	(0.024)	(0.068)	(0.004)	(0.006)	(0.014)	(0.000)	(0.000)	(0.000)	(0.020)	(0.019)	(0.054)
Year 2009	-0.0424**	-0.0466**	-0.0345*	-0.0303**	-0.0294**	-0.0247**	-0.0016**	-0.0013**	-0.0013**	-0.0105*	-0.0159**	-0.0085
	(0.005)	(0.006)	(0.014)	(0.001)	(0.001)	(0.003)	(0.000)	(0.000)	(0.000)	(0.004)	(0.006)	(0.012)
Constant	0.0445+	0.0328	-0.0408	0.1563**	0.1635**	0.1540**	-0.0259**	-0.0224**	-0.0223**	-0.0859**	-0.1082**	-0.1725**
	(0.023)	(0.026)	(0.064)	(0.004)	(0.006)	(0.012)	(0.000)	(0.000)	(0.000)	(0.021)	(0.022)	(0.053)
Observations	1,875	1,066	387	1,875	1,066	387	1,875	1,066	387	1,875	1,066	387
R-squared	0.351	0.275	0.458	0.614	0.561	0.596	0.879	0.869	0.908	0.306	0.233	0.443

Notes: Robust clustered standard errors in parentheses; ** significance at 1%, * significance at 5%, + significance at 10%.

Appendix 7: List of the industries in terms of the level of technology.

Group 1: Low technology
D15: Food and beverages
D16: Cigarettes and tobacco
D17: Textile products
D18: Wearing apparel, dressing and dying of fur
D19: Leather and products of leather; leather substitutes; footwear.
D20: Wood and wood products, excluding furniture
D21: Paper and paper products
D22: Printing, publishing, and reproduction of recorded media
D23: Coke and refined petroleum products and nuclear fuel
D36: Furniture and other products not classified elsewhere
D37: Recycles products

Group 2: Medium technology
D24: Chemicals and chemical products
D25: Rubber and plastic products
D26: Other non-metallic mineral products
D27: Iron, steel and non-ferrous metal basic industries
D28: Fabricated metal products, except machinery and equipment

Group 3: High technology
D29: Machinery and equipment
D30: Computer and office equipment
D31: Electrical machinery apparatus, appliances and supplies
D32: Radios, television and telecommunication devices
D33: Medical equipment, optical instruments
D34: Motor vehicles and trailers
D35: Other transport equipment

Appendix 8: Theoretical foundation of the model

Following Greenaway et al. (1999), and Milner and Wright (1998), the model specification of the impact of export status on employment begins by using a simple Cobb-Douglas production function for firm i at time t:

$$Q_{it} = A^{\lambda} K_{it}^{\alpha} L_{it}^{\beta} \qquad (1)$$

where Q_{it}= real output, and two input factors, K_{it}= capital and L_{it}= labour.

$$\frac{\partial Q_{it}}{\partial K_{it}} = \alpha A^{\lambda} K_{it}^{\alpha-1} L_{it}^{\beta} \qquad (2) \qquad \frac{\partial Q_{it}}{\partial L_{it}} = \beta A^{\lambda} K_{it}^{\alpha} L_{it}^{\beta-1} \qquad (3)$$

,

A firm following a profit maximizing strategy will choose the level of labour and capital where the marginal revenue of labour ($MRP_{L)}$ is equal to wage (w) and the marginal revenue of capital (MRP_K) is equal to the cost (c).

Multiply (2) to unit price (P): $MRP_L = p\beta A^{\lambda} K_{it}^{\alpha} L_{it}^{\beta-1} = w$ (4)

And (3) to unit price (P): $MRP_K = p\alpha A^{\lambda} K_{it}^{\alpha-1} L_{it}^{\beta} = c$ (5)

From equation (4): $K_{it}^{\alpha} = \frac{w}{p\beta A^{\lambda} L_{it}^{\beta-1}}$ (6)

From equation (5): $K_{it}^{\alpha-1} = \frac{c}{p\alpha A^{\lambda} L_{it}^{\beta}}$ (7)

From equation (7): $K_{it}^{\alpha} = \frac{cK_{it}}{p\alpha A^{\lambda} L_{it}^{\beta}}$ (8)

But equation (6) = equation (8), solving for K : $K_{it} = \frac{w\alpha}{c\beta}.L_{it}$ (9)

Substituting K_{it} in equation (9) into equation (10):

$$Q_{it} = A^{\lambda}\left(\frac{w\alpha}{c\beta}.L_{it}\right)^{\alpha} L_{it}^{\beta} \quad (10)$$

From equation (10): $Q_{it} = A^{\lambda} w^{\alpha} L_{it}^{\alpha} L_{it}^{\beta} c^{-\alpha} \beta^{-\alpha}$ (11)

Taking logarithms and rearranging the terms on the right side of equation (11): $\ln L_{it} = \varphi_0 + \varphi_1 \ln(\frac{w}{c}) + \varphi_2 \ln(Q_{it})$ (12)

Where: $\varphi_0 = -(\lambda \ln A + \alpha \ln \alpha - \alpha \ln \beta)/(\alpha + \beta)$

$\varphi_1 = -\alpha/(\alpha + \beta)$, $\varphi_2 = 1/(\alpha + \beta)$

According to Greenaway et al. (1999), A is assumed to change with export status (EX_{it}). Therefore, equation (12) is written as follows:

$$\ln L_{it} = \phi_0 + \phi_1 \ln(w/c) + \phi_2 \ln(Q_{it}) + \phi_3 EX_{it}$$

Instead of considering labour as a homogeneous factor of production, our study also uses the composition of the workforce (the share of casual workers and the proportion of permanent workers) to define labour (Were, 2011).

Appendix 9: The impact of export participation on the share of permanent workers

Variables	Dependent variable: the share of permanent workers	
	Pooled	Fixed-effect
	(1)	(2)
Export	-0.058**	-0.076**
	(0.016)	(0.026)
Size	-0.001**	-0.002**
	(0.000)	(0.001)
Output in log	-0.020**	-0.013
	(0.005)	(0.010)
Women share	0.001	0.091*
	(0.019)	(0.035)
Tax code	0.026	0.025
	(0.016)	(0.016)
Average wage in log	0.124**	0.127**
	(0.011)	(0.018)
Competition level	0.005	0.015
	(0.020)	(0.021)
Urban dummy	-0.006	
	(0.010)	
Union percentage	0.074**	0.047
	(0.017)	(0.028)
Time dummy	-0.085**	-0.086**
	(0.015)	(0.015)
Medium tech sector	0.005	-0.046+
	(0.007)	(0.025)
High tech sector	-0.016	-0.045
	(0.016)	(0.031)
Constant	0.873**	0.830**
	(0.026)	(0.056)
Observations	2,988	2,988
R-squared	0.194	0.224

Appendix 10: Exports and the number of employees

Ordinary least squares (2007-2009)

Dependent variable: Log of employment				
VARIABLES	Pooled	Fixed-effect	Pooled	Fixed-effect
Export (yes=1)	1.5541**	0.1169+	0.7769**	0.1387*
	(0.105)	(0.066)	(0.097)	(0.070)
Output			0.00004**	0.00001+
			(0.000)	(0.000)
Women share			0.9910**	0.1701*
			(0.129)	(0.072)
Formal status of firms			0.3681**	0.0536
(yes=1)			(0.092)	(0.033)
Average wage in log			0.2266**	-0.0933**
			(0.037)	(0.029)
Competition level			0.1124+	-0.0118
			(0.066)	(0.036)
Urban (yes=1)			-0.0678	
			(0.071)	
Union percentage			1.0540**	0.1088
			(0.102)	(0.077)
Medium tech			0.0872*	0.0002
			(0.038)	(0.074)
High tech			0.2348**	0.0513
			(0.064)	(0.097)
Year 2009	-0.0306	-0.0172	-0.0784**	-0.0081
	(0.021)	(0.018)	(0.022)	(0.019)
Constant	2.2876**	2.3790**	1.1374**	2.3889**
	(0.048)	(0.009)	(0.086)	(0.065)
Observations	2,988	2,988	2,988	2,988
R-squared	0.149	0.003	0.457	0.037

*Notes: Clustered robust standard errors in parentheses. ** p<0.01, * p<0.05, + p<0.1.*

Appendix 11: The linkage between export participation and firm survival

VARIABLES	Pooled Probit	Pooled Probit	Pooled Probit	Pooled Probit
	(1)	(2)	(3)	(4)
Export	-0.0013	-0.0016		
	(0.026)	(0.026)		
Continuing exporters			0.0817**	0.0815**
			(0.027)	(0.027)
Beginning exporters			0.0167	0.0157
			(0.056)	(0.056)
Exiting exporters			-0.1279**	-0.1281**
			(0.049)	(0.049)
Size in log	0.0186*	0.0187*	0.0178*	0.0178*
	(0.008)	(0.008)	(0.008)	(0.008)
Firm size squared	-0.0000**	-0.0000**	-0.0000**	-0.0000**
	(0.000)	(0.000)	(0.000)	(0.000)
Firm age	0.0008	0.0008	0.0008	0.0008
	(0.002)	(0.002)	(0.002)	(0.002)
Firm age squared	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)
Innovation dummy	0.0584**	0.0583**	0.0585**	0.0584**
	(0.013)	(0.013)	(0.013)	(0.013)
Year dummy	0.0242*	0.0239*	0.0180	0.0178
	(0.012)	(0.012)	(0.012)	(0.012)
Household ownership	0.0560**	0.0564**	0.0578**	0.0582**
	(0.017)	(0.017)	(0.017)	(0.017)
Urban dummy	-0.0768**	-0.0775**	-0.0757**	-0.0762**
	(0.013)	(0.013)	(0.013)	(0.013)
Low tech sectors	0.0288*	0.0288*	0.0274*	0.0274*
	(0.012)	(0.012)	(0.012)	(0.012)
Labour productivity		0.0001		0.0001
		(0.000)		(0.000)
ROA		0.0007		0.0007
		(0.004)		(0.004)
Observations	4,849	4,849	4,849	4,849

Notes: Robust standard errors in parentheses; statistically significant at 10% (+), at 5% (*), and at 1% (**). The estimated coefficients are reported. The dependent variable is a dummy which takes the value of 1 if the SME is in the market, and 0 if it has left the market.