INTERNATIONALISATION ACTIVITIES AND PERFORMANCE OF VIETNAMESE SMES

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Abstract

Small and medium enterprises accounts for a majority of Vietnamese enterprises. They have made significant contributions to the economy of Vietnam by creating employment, income and economic growth. Increasingly, they also participate in internationalisation activities as Vietnam is furthering its integration to the global economy. This paper focuses on the impact of internationalisation activities and the performance of Vietnamese manufacturing SMEs. Specifically, it examines the impact of exporting, subcontracting and cooperation with a foreign partner on the technical efficiency of SMEs in the manufacturing sector and its sub-sectors from three surveys of domestic private SMEs in 2002, 2005 and 2007. Using a stochastic frontier production function model and a technical inefficiency effects model the paper found that there are limited benefits of these activities on the technical efficiency performance of manufacturing SMEs across different sub-sectors. Thus, the paper suggests SMEs to upgrade their technology and skills of their employees to become competitive and benefit from these internationalisation activities. In addition, it emphasises the need for the government to focus on encouraging SMEs in sub-sectors which are competitive in the international markets to pursue these activities and provide quality information to help domestic SMEs to identify the right partners from overseas.

Keywords: manufacturing small and medium enterprises, firm performance, internationalisation, Vietnam.

INTRODUCTION

Most Vietnamese enterprises are small and medium enterprises (SMEs). They were first officially defined in 2001 as enterprises with fewer than 300 workers or a registered capital of less than 10 billion VND (about US$630,000 at the time). A more recent definition, which became effective from 20 August 2009, provides a definition for each economic sector. It changes the capital clause from registered capital in the earlier definition to total capital of up to 100 billion VND (about US$ 5.6 million at the time). While the upper limit for employees remains below 300 for Agriculture, Forestry and Fishery sector, and Industry and Construction sector and it reduces to less than 100 workers for Services sector. Of the 155,771 formally registered enterprises in operation in 2007, SMEs accounted for 97.4 percent of the total enterprises according to the employee criterion or 84.7 percent according to the registered capital criterion in the definition in 2001.

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After the introduction of an economic reform program known as *Doi Moi* in 1986, the Company Law and Private Enterprise Law were passed in 1990 and 1991. With the implementation of these laws, registrations of domestic private enterprises increased steadily from 1992 (Figure 1). New business registrations were mostly in the private sector. Between 1992-1999 the private sector grew at 24 percent per annum (Steer, 2001:4). Although this growth rate was high, it started from a small base. By the end of 1999, a total of 45,000 enterprises had been established. This is a modest number given the size of the population and in comparison to other countries in the region. Despite the official recognition of the private sector under the laws, the newly emerged non-state SMEs faced several major obstacles in the 1990s including institutional weakness, capital shortage, limited access to markets, technical and management limitations, and unfavourable public attitudes (Le Cong Luyen Viet, 2001). Furthermore, during the 1990s, state-owned enterprises were politically favoured and development strategy was focussed on import substituting. Meanwhile, the private sector had weak management and capital generation ability in the early period after *Doi Moi*. All of these had their influence on the growth of the private sector in the 1990s (Webster, 1999; Webster & Taussig, 1999).

However, Figure 1 also shows that the growth in registration of new enterprises since 2000 has been strong. This comes as the result of the new Enterprise Law (EL) which became effective in 2000. This important law combined the earlier Company Law and Private Enterprise Law into one law. Thus, it provided the legal framework for all types of domestic private enterprises. The EL contains an important innovation with a principle often referred to as “to register first, then to check” by the business community (World Bank, 2005). This represents a fundamental shift in the approach and tools with which the government manages enterprises. The EL has also revitalized entrepreneurship and strengthened the trust of investors and entrepreneurs in the reforms and policies initiated by the Government (Vo Tri Thanh and Nguyen Tu Anh, 2006). According to statistics from the National Business Information Centre, more than 414,000 enterprises have been established from 2000 to 2009, which is more than nine times the number of registrations for the 1991 - 1999 period. Thus, the cumulative number of business registrations during 1992 - 2009 reached almost 460,000 enterprises. At the current rate of growth, it is expected that total business registrations will reach about 540,000 in 2010 surpassing the target to have 500,000 business registrations by 2010, set under the SME Development Plan 2006-2006, by eight percent.

Like their counterparts in other transitional economies, domestic Vietnamese firms do not have much experience dealing with international markets due to restrictions under central planning. Although businesses in the South had some experience in international trade before the war ended, they suffered from the restrictions after the war ended in 1975. Even after *Doi Moi* economic reform in 1986 there was a sceptical view about domestic private enterprises at least in the first decade after the reform (Ari Kokko and Sjoholm, 2000). Before 1998 most private and foreign enterprises were not able to obtain export quotas directly. It was not until December 1998 that export quotas were auctioned to state, private and foreign enterprises in an attempt to give export quotas to the best performing enterprises (Cuong M. Nguyen and Quan V. Le, 2005).

It was observed that Vietnamese domestic firms are only just beginning to emerge as significant exporters, following the relaxation of policies that had restricted opportunities for private firms to be directly involved in export activities (Mallon, 2007). Compared to other countries in the region, Vietnamese businesses are weak in many commercial skills, ranging from marketing capacity to having little business networks. For example, Vietnamese managers are still developing an understanding of the relationship between product quality and customer satisfaction in the international market (Neupert, Baughn, and Dao, 2006). In addition, Vietnam’s competitors have invested large sunk costs to build up their capacity with a longer involvement in international trading. It will take time for Vietnamese SMEs to develop skills and build up networks with their overseas trading partners.

This paper focuses on the impact of internationalisation activities and the performance of Vietnamese manufacturing SMEs. Specifically, it examines the impact of exporting, subcontracting and cooperation with a foreign partner on the technical efficiency of SMEs in the manufacturing sector and its sub-sectors from three surveys of domestic private SMEs in 2002, 2005 and 2007. The paper is structured as follows. Section 2 below provides a literature review about the impacts of exporting, subcontracting and cooperation with a foreign partner on firm performance. Section 3 describes the data and explains the methodology, including a stochastic frontier production function.
(SFPF) model and a technical inefficiency effects model, to analyse the data. Section 4 presents and discusses the estimation results for manufacturing SMEs in aggregate and nine individual sub-sectors within the manufacturing sector. Section 5 concludes the paper and provides some policy recommendations.

LITERATURE REVIEW

SMEs and Exporting

Essentially SMEs can be involved in exporting activities through two modes: indirect exporting and direct exporting. Many SMEs are involved in world markets as indirect exporters by supplying intermediate inputs or subcontracting to large firms (Biggs, 2002:8-9). Becoming indirect exporters could be a sensible choice for SMEs to bring their products to overseas markets. They can link up with TNCs or large domestic exporting firms and thereby integrate into global chains of production. The fast and efficient subcontracting SMEs provide critical flexibility and ‘just-in-time’ benefits to the supply chain which are an important source of competitive advantage in international markets (Porter, 1990 as cited by Biggs, 2002:9). Nevertheless, it is not impossible for SMEs to become direct exporters. As discussed above, SMEs can create competitive niches and prosper in world markets by working through industry-based clusters. Most industry clusters developing countries are based on family social networks which reduce the substantial transaction costs (Biggs, 2002:9). There are success export stories in developing countries in labour intensive sectors such as ceramics, garments, leather and shoes (UNCTAD, 2005).

Exporting is widely believed to have a positive impact on the performance of firms due to self-selection of more efficient firms into exporting and learning-by-exporting (Arnold & Hussinger, 2005; Delgado, Farinas, & Ruano, 2002; OECD and APEC, 2007; Wagner, 2007). A common finding from studies of firms in developing countries is that exporting firms are more efficient than non-exporters (Delgado, et al., 2002; C.-H. Yang & Chen, 2009). Yet, Wagner (2007) noted that it is too early to call this finding a stylised fact. Indeed, several studies about firms in transitional economies found no significant impact of exporting on technical efficiency (Brada, King, & Ma, 1997; Commander & Svejnar, 2007; Jones, Klinedinst, & Rock, 1998).

SMEs and Subcontracting

International production in the period of globalisation has led to the development of cross-border production operations, including partnerships of different types (OECD, 2000a:6). One type of networking is subcontracting relationships that facilitate economic specialisation of firms as well as superior access to information (OECD, 2000b:16). UNCTAD (2005:122) gives the definition of subcontracting as a local firm manufactures a component or sub-assembly for a foreign manufacturer located either in a newly industrializing country or overseas. UNCTAD has shown that trans-national corporations (TNCs) and their affiliates have developed integrated business-to-business strategies, providing suppliers and subcontractors with various modes of technical, human and financial support (UNCTAD, 2001).

Subcontracting is somewhat similar to the putting-out system which is a vertical inter-firm network frequently formed by large firms on the ordering side with SMEs as suppliers. In the putting-out system, the large firms on the ordering side are usually wholesalers or commercial capitalists. They do not engage directly in the production process and only control SMEs as suppliers from outside the production process (Sato, 2000). In this system wholesalers assist, cooperate and provide benefits to SMEs through several mechanisms such as supplying raw materials, lending funds, and supplementing important facilities and tools. Unlike the putting-out system, the large ordering firm in subcontracting is often an industrial firm that engages in manufacturing activities as its mains business. Therefore, subcontracting is based on technological necessity in the production process. SMEs are also more connected to their ordering firms in a subcontracting system than in the putting-out system (Adam, 2006).
Subcontracting and other forms of collaborative arrangements with foreign firms offer certain advantages compared with other strategies, since they can reduce market entry costs and barriers, with lower associated business risks. At the same time, it must also be recognised that in some circumstances this type of ‘cooperation’ can involve a high level of dependence associated with a narrow customer base, leaving subcontractors vulnerable to the purchasing decisions of contractors to switch sources of supply (Smallbone, Piasceki, Venesaar, Todorov, & Labrianidis, 1999). Empirical work on the relationship between subcontracting and firm performance tend to focus on firms that outsource their activities to subcontractors, while much less emphasis is given to subcontractors themselves (Heshmati, 2003; Yang and Chen, 2009). However, the results from these studies are mixed. This led Iqbal and Urata (2002) to observe that there is no convincing empirical case that subcontracting is an important determinant of firm profit and dynamism, after summarising the results of several studies of firms in East Asian countries. For example, Urata and Kawai (2002) found that participation in subcontracting has a significantly positive impact on total factor productivity (TFP) of Japanese SMEs in the 1966-1996 period. Meanwhile, Kimura (2002) found no significant impact of subcontracting on efficiency or profit for either subcontracting firms or subcontractors in his empirical analysis of Japanese SMEs during the 1966-1987 period. Similarly, no statistically significant relationship between subcontracting and TFP growth is found for eight out of nine sub-sectors in Taiwan’s manufacturing sector during 1981-1991 (B.-Y. Aw, 2002). However, a recent study of Taiwan’s electronics sub-sector found that being a subcontractor has a significant impact on improving SMEs’ technical efficiency (C.-H. Yang & Chen, 2009).

**SMEs and Cooperation with a Foreign Partner**

It is observed that the greater degree of vertical disintegration in the entrepreneurial economy in the era of globalisation has resulted in more co-operation among independent firms. This replaces internal transactions within a large, vertically integrated corporation. The existence of a greater number of firms in the entrepreneurial economy also means that there is greater co-operation among firms (Audretsch & Thurik, 2001:294). The great majority of cooperation or alliances have been to gain access to new products or processes, technologies and organizational competencies, especially those perceived necessary to advance their core competencies (Acs & Preston, 1997).

Cross-border co-operation is common in technological agreements. This type of alliance is a typical phenomenon in OECD countries, which host most of the world’s innovative companies. Nevertheless, the number of inter-firm technology agreements involving partners from developing countries is increasing (UNCTAD, 2005:26). According to UNCTAD (2005:29), joint ventures and other technological alliances have proliferated, particularly in new technologies and the automobile industry. The reasons for undertaking such alliances include: the high costs and risks of R&D and technology development; the need to pre-empt other competitors by undertaking R&D rapidly; benefits from a mutual exchange of complementarities in R&D expertise; and a reduction of the time required to develop a product. Different forms of cooperation such as joint-venture and strategic alliances are, therefore, hard networks which are formally and tightly linked, and more commercially focussed involving a limited number of pre-selected firms (OECD, 2000c:28). However, UNCTAD (2005:29) also reports that alliances between TNCs and developing country SMEs are fraught with difficulties due to the fact that partners often have different expectations and pursue separate and often conflicting goals. Furthermore, developing country partners may not have the necessary skills and technological capabilities to participate in the co-operation.

**DATA AND METHODOLOGY**

Productivity and efficiency represents the economic aspects of firm performance. Growth in efficiency and productivity is the most important aspect of growth as it focuses on the quality of growth. For this reason theoretical and empirical works on firm performance focus on measuring enterprise productivity and efficiency (Storey, 1990).
Average labour productivity had been used as a measure of efficiency until Farrell (1957) introduced a method to measure efficiency in his seminal paper. Farrell’s efficiency measure contains an efficient production frontier which is the output that a perfectly efficient firm could obtain from any given combination of inputs. The performance of a productive unit will be measured against that efficient frontier (Farrell, 1957:254).

According to Kalirajan and Shand (1999:152) a measure of technical efficiency in the ith firm can be defined as:

\[ TE = \frac{Y_i}{Y^*_i} \]  

(1)

where:

- \( Y_i \): Actual output
- \( Y^*_i \): Maximum possible output

The above equation is the basic model used for measuring technical efficiency. The actual output is observable in this equation. However, maximum possible output is not observable and must be estimated. A ratio of one in the above equation would mean that the firm is technically efficient and operates on the production frontier.

A number of techniques have been developed to estimate this frontier. Several authors broadly classified them into two main groups: parametric and non-parametric (Coelli, Rao, & Battese, 2005; Kalirajan & Shand, 1999; Kumbhakar & Lovell, 2003; Murillo-Zamorano, 2004). The parametric method uses an econometric technique by specifying a stochastic production function which assumes that the error term is composed of two elements. One is the typical statistical noise which represents randomness. The other represents technical efficiency which is commonly assumed in the literature to follow a one-sided distribution (Alvarez & Crespi, 2003; Murillo-Zamorano, 2004).

On the other hand, the non-parametric approach does not distinguish between technical efficiency and statistical noise. It is, therefore, considered as a non-statistical technique as the inefficiency scores and the envelopment surface are ‘calculated’ rather than estimated. The non-parametric approach is often associated with Data Envelopment Analysis (DEA) which is based on a mathematical programming model to estimate the optimal level of output conditional on the amount and mix of inputs (Murillo-Zamorano, 2004). A comparison of the stochastic frontier and DEA frontier is given in Figure 2.

In the context of this study the stochastic frontier production function approach is most relevant. The first reason is the ability of the stochastic frontier approach to consider both factors beyond the control of the firm and firm-specific factors, and hence it is closer to reality. The second reason is the separation of the random variation of the frontier across firms, the effects of measurement error and other random shocks from the effect of inefficiency.

The stochastic frontier production model was developed independently and simultaneously by Aigner, Lovell and Schmidt (ALS) (1977), Meeusen and Van den Broeck (MB) (1977), and Battese and Corra (1977). In this model there is a composed error term which captures the effects of exogenous shocks beyond the control of the analysed units in addition to incorporating technical inefficiency. Errors in measurement of outputs and observations are also taken into consideration in this model (Kumbhakar & Lovell, 2003; Murillo-Zamorano, 2004).

The generalised functional form in the Cobb-Douglas case of the stochastic production function can be specified as:

\[ Y_i = x_i \beta + (V_i + U_i), \quad i = 1, ..., N, \]  

(2)

where

- \( Y_i \) is the production (or the logarithm of production) of the i-th firm;
- \( x_i \) is a \( k \times 1 \) vector of (or transformation of) the input quantities of the i-th firm;
- \( \beta \) is a vector of unknown parameters;
\( V_i \) are random variables which are assumed to be independently and identically distributed (iid) as \( N(0, \sigma_v^2) \).

\( U_i \) which are non-negative random variables that are assumed to account for technical inefficiency in production and are often assumed to be iid. \( N(0, \sigma_u^2) \). It is assumed to be half-normal, exponential and truncated from below at zero.

The maximum likelihood method can be used to estimate the coefficients of the above production function. The likelihood function is expressed in terms of the variance parameters of the frontier function:

\[
\sigma_v^2 = \sigma_v^2 + \sigma_u^2 \quad \text{and} \quad \gamma = \frac{\sigma_u^2}{\sigma_v^2}
\]

where

\( \sigma_v^2 \) is variance of noise and
\( \sigma_u^2 \) is variance of inefficiency effects.

If the value of \( \sigma_v^2 \) is equal to zero, then \( u_i \) is also zero which means the firms are fully efficient. \( \gamma \) has a value between one to zero. If the value of \( \gamma \) is zero, the deviations from the frontier are attributed to random error. If it has the value of one, the deviations are due to technical inefficiency.


We also model the factors influencing technical inefficiency including the firm-specific and external environment variables as follows:

\[
\mu_i = \delta_0 + \delta_1 age_i + \delta_2 size_i + \delta_3 comp_i \\
+ \delta_4 urban_i + \delta_5 hh_i + \delta_6 coop_i \\
+ \delta_7 ltd_i + \delta_8 direx_i + \delta_9 foreign_i \\
+ \delta_{10} sub_i + \delta_{11} credit1_i + \delta_{12} land_i \\
+ \delta_{13} credit2_i + \delta_{14} new_i + \delta_{15} improve_i + \omega_i
\]

The variables in Equations (4) and their description are summarised in Table 1.

A software package which is most commonly used in the estimation of stochastic production frontiers in the literature is FRONTIER 4.1 developed by Coelli (1996). The software program carries out three steps of estimation. The first step is Ordinary Least Squares (OLS) estimates of the production function. It provides unbiased estimators for all the except the intercept. The OLS estimates are then used as starting values to estimate the final maximum likelihood model. The second step carries out a two-phase grid search of the value of the likelihood function which is estimated for

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1 This means that the errors are independently and identically distributed normal random variables with zero means and variances \( \sigma^2 \).

2 \( U_i \) reflects one-sided deviations of actual output from the maximum level of production due to technical inefficiency. If a firm is fully technically efficient, \( U_i=0 \), otherwise it will be greater than zero. Thus, it is also called a one-sided error component.
different values of with the parameters derived in the OLS. The third and final step calculates the final maximum likelihood estimates (MLE) with an iterative Davidon-Fletcher-Powell algorithm. This step uses the values of the‘s from the OLS and the value of from the intermediate step as starting values (Coelli, 1996).

This study uses recent firm-level data from three comprehensive and large-scale surveys of Vietnamese small and medium enterprises in 2002, 2005 and 2007. The surveys were carried out by the Vietnamese Institute for Labour Studies and Social Affairs (ILSSA) in Hanoi with the assistance of international counterparts from Sweden and Denmark. The first round of the survey was supported by the Swedish International Development Authority (SIDA) and the remaining ones were assisted by the Danish International Development Agency (DANIDA).

The surveys provide a valuable set of data about private sector SMEs in Vietnam. The surveys were implemented after the important Enterprise Law of 2000 was introduced. They contain the most comprehensive data about SMEs in Vietnam. Although other surveys have a larger coverage, they do not focus on SMEs. In addition, the focus on domestic non-state and manufacturing SMEs in the survey make it the only dataset available about this most important sector for SMEs in Vietnam. The surveys also had coverage in different regions of Vietnam, including urban and rural areas. The sample was stratified to ensure that different types of ownership were represented based on the overall distribution of ownership in the population of domestic non-state enterprises. In total, 6,619 enterprises from different sub-sectors in manufacturing industries were interviewed in the three survey rounds.

From the raw data obtained in the surveys described above, data for analysis is constructed for the domestic non-state manufacturing SMEs sector. Enterprises reporting in the survey that they were not in the manufacturing sector are removed from the dataset. Similarly, enterprises with missing values are also removed. After this process has been carried out, the eligible observations for analysis have been reduced to 5,204 with 926 firms in 2002, 2,228 firms in 2005 and 2,050 firms in 2007. The usable observations are classified into 9 sub-sectors according to the International Standard Industrial Classification (ISIC) codes for analysis. They are: (i) Food and Beverages (FB); (ii) Textiles, Garments and Footwear (TGF); (iii) Electrical and Electronic Equipment (EE) (iv) Wood and Furniture Products (WF); (v) Chemical, Rubber and Plastic Products (CRP); (vi) Paper, Printing and Publishing (PPP); (vii) Metal Products (MP); (viii) Non-metallic Products (NMP); and (ix) Machinery and Equipment (ME). Table 2 shows the distribution of observations for each of the nine sub-sectors.

**RESULTS AND DISCUSSIONS**

This section will focus on reporting and discussing the results of the three types of internationalisation activities identified above including exporting, subcontracting and cooperation with a foreign partner among other firm characteristics and environmental variables examined in Equation (4).

**Exporting**

The results from this study, presented in Table 3, indicate that exporting has no impact on the technical efficiency (TE) of the manufacturing sector in all three surveys in 2002, 2005 and 2007. It confirms the results found in other transitional economies discussed above. Evidence from some sub-sectors in this study also supports the findings from previous studies which found that exporting has either a positive impact or no impact on the TE of sub-sectors in manufacturing. As shown in Table 3, exporting has a negative correlation with technical inefficiency in three sub-sectors: FB and PPP (in 2002) and MP (in 2007). Thus, exporting SMEs in these three sub-sectors are more technically efficient than non-exporters, in the corresponding surveys. A significant effect of exporting on TE is

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3 For a description of the surveys, see Rand et al. (2004), Rand and Tarp (2007), and Rand et al. (2008)
4 They include the Industrial Censuses and Business Censuses carried out by the General Statistics Office and Business Environment and Enterprise Productivity Surveys conducted by the World Bank.
not found for other sub-sectors. Exporting firms in the three sub-sectors above all come from urban 
areas, which suggest that they benefit from better information and become efficient exporters. In 
addition, the proportion of exporting SMEs in these sub-sectors is lower than their share in the total 
manufacturing sample, suggesting there is self-selection of efficient firms into exporting. However, it 
is not clear whether learning-by-exporting plays a part in the better TE performance of firms in these 
sub-sectors, because none of the exporting SMEs in the sample for the MP sub-sector in 2007 had 
long term cooperation with a foreign partner. Long term-cooperation with foreign partners will be 
discussed below but the causality of exporting firms’ TE is beyond the scope of this paper.

According to the results shown in Table 3, exports do not exert a significant impact on the TE of 
the manufacturing sector as a whole. This result is consistent across the three surveys in 2002, 2005 
and 2007. The same is true for the 2005 data in which exports displayed an insignificant impact on all 
sub-sectors operating with technical inefficiency. In fact, this insignificant result is found in most sub-
sectors with the exception of the above three sub-sectors of FB, PPP in 2002 and MP in 2007.

The proportion of exporting SMEs in the Vietnamese non-state sector is low. According to the 
survey results, only 3 percent of the firms in the 2002 sample participated in direct exports (Kokko & 
Sjöholm, 2005). However, this is more than doubled in the survey in 2005 with 6.4 percent of 
manufacturing firms having direct exports (Rand & Tarp, 2007). In 2007, exporting SMEs accounted 
for 6.8 percent of the total sample. This is above the target of 6 percent of SMEs participating in direct 
exports by 2010, set in the SME Development Plan for 2006-2010 (MPI, 2006). Although the share of 
exporting SMEs increased over the 2002-2007 period, the positive impact of exporting on TE has 
become less significant as the results for 2005 and 2007 show.

Subcontracting

As shown in Table 4, the results from this study also indicate that being a subcontractor has a mixed 
impact on the TE of Vietnamese manufacturing SMEs, depending on the sub-sectors and survey 
years. In 2002, subcontracting had no significant impact on the TE of firms in the FB and ME sub-
sectors. A previous study of Vietnamese manufacturing SMEs for the 1996-2001 period found an 
insignificant impact of subcontracting on the TE of most sub-sectors although there are exceptions 
with one sub-sector each in 1996 and 2001 (Tran Thi Bich, Grafton, & Kompas, 2008). However, this 
study finds subcontracting to be significantly and positively related to technical inefficiency for five 
sub-sectors for 2002. They are the TGF, EE, CRP, PPP, and NMP sub-sectors. Thus, firms producing 
as subcontractors in these sub-sectors tend to have lower TE than firms not involved in this 
arrangement in the 2002 survey.

Similar results are found for the EE and PPP sub-sectors in 2007, while this is also true for the 
whole manufacturing sample in both the 2002 and 2007 surveys. This finding is surprising because it 
is different from the conventional view that subcontracting is efficiency-enhancing or at least neutral 
to TE. The positive impact of subcontracting on TE is only found in 2005 for the FB and EE sub-
sectors, while it has no impact on the manufacturing sector as a whole and the CRP and PPP sub-
sectors which operated with technical inefficiency. The share of firms which worked as 
subcontractors in the manufacturing sample was 6.6 percent in 2002. This was reduced to 6.3 percent 
in 2005, but then increased to 12.3 percent in 2007. It suggests that only efficient firms remained in 
subcontracting arrangements in 2005 because the share of these firms in 2005 was lower than the 
other two surveys.

Although the negative correlation between subcontracting and TE found in 2002 and 2007 is 
surprising, this is understandable. By entering into a subcontracting arrangement, SMEs have to 
follow the terms and conditions of the agreement. This will limit flexibility and innovation and hence 
their efficiency performance. Furthermore, the comfort working as subcontractors to other firms can 
lead SMEs to become lazy and less innovative. Most of the subcontracting SMEs were only involved 
in simple assembly, low skill and low value adding activities that do not improve technical efficiency. 
Tran Tien Cuong et. al. (2007) observe that networks between SMEs and large enterprises through 
subcontracting are generally weak with a low level of subcontracting. They also note that SMEs have 
tended to become marginalized at the lower or lowest end of the production supply chain working as 
subcontractors and assemblers. Another reason is, perhaps, less technically efficient firms turn
themselves into subcontractors because they are not able to independently compete in the market. In this case they are easily exposed to lower cost subcontracting options not taken by other firms.

**Cooperation with Foreign Partners**

Another outward orientation activity surveyed for Vietnamese SMEs in the non-state sector is long-term cooperation (more than one year) with foreign partners. However, the question asked in the 2002 survey is different from the question used in the 2005 and 2007 surveys. The 2002 survey asked about cooperation with foreign partners in general. The types of cooperation can be in terms of technology transfer agreement, licensee production, sub-contracting, training, and marketing and market information. In the 2005 and 2007 surveys, the question focused only on long-term relations with direct export customers. Nevertheless, the share of firms with long-term cooperation was only 2.9 percent of the sample in the 2002 survey, while firms with long-term relations with direct export customers accounted for 4.4 percent and 4.6 percent in 2005 and 2007, respectively. The impact of long-term cooperation with foreign counterparts on the TE of manufacturing SMEs is analysed in this study and the summary results are presented in Table 5.

The results from the analysis indicate that long-term cooperation with foreign partners has no impact on the TE of many sub-sectors. This is also the case for the manufacturing sector as a whole in 2002. When it does have an impact it tends to negatively influence the TE of Vietnamese firms (see Table 5). For example, long-term relationship with export customers are found to be positively correlated with technical inefficiency in the full manufacturing samples for 2005 and 2007, when this type of cooperation is significant. Thus, this type of cooperation has a negative impact on the TE of manufacturing firms in these two surveys. Given that the cooperation is with export customers in these surveys, the relations can restrict the flexibility of the exporting SMEs and their ability to innovate. They can be restricted to low value added activities in the production network. These SMEs have to produce goods according to the specifications given by their long-term customers. In addition, foreign counterparts commonly asked for certification of products and procedures. According to the survey results 59 percent and 62 percent of the firms with long-term relationship with export customers reported that their partners requested certification of products and procedures in 2005 and 2007, respectively. In addition, these firms appear to rely heavily on their counterparts for technology and expertise. In 2005, 79 percent of the firms mentioned that the cooperation with foreign partners provided them with the technology or expertise that they otherwise would not have access to, while the corresponding figure for 2007 was 71.8 percent. The dependence on expertise and technology from foreign counterparts works against the TE performance of manufacturing firms. Perhaps, the technology provided is basic technology and outdated. In fact, 36.2 percent of these firms in 2005 and 31.1 percent of these firms in 2007 still indicated in the surveys that the cooperation has no impact or even unsatisfactory impact on their performance.

The negative impact of foreign cooperation on TE is also found in other sub-sectors with a statistically significant effect including the PPP sub-sector in 2002 and the FB and CRP sub-sectors in 2005. The results from this study of Vietnamese manufacturing SMEs are revealing as it is different from the common finding observed by Schmitz and Nadvi (1999:1508) that firms with increased cooperation show greater improvement in performance. The results here suggest that Vietnamese domestic SMEs in these sub-sectors are in a weaker position in their cooperation arrangements. They seem to be dominated by their foreign counterparts in product specifications and certification as well as technology and expertise, as discussed above. The inexperience of Vietnamese SMEs in international markets could be a reason. There is only one exception where cooperation with foreign partners is found to be statistically significant and positively related to the TE of firms, in the ME sub-sector in 2002. Since the types of cooperation surveyed in 2002 were broader their combined effect could have a positive impact and enhance the TE performance for the ME sub-sector, and the cooperation tends to facilitate access to new technology, know-how and information. In fact, this sub-sector is also predominant in East Asian production networks (Ando et al., 2006 and Obashi, 2009). Perhaps, the established pervasiveness of this regional network has resulted in an efficient cooperation. However, long-term cooperation with direct export customers is found to have no impact
on the TE of different sub-sectors in the 2007 survey. Thus, firms with this type of cooperation are not different from other firms in their sub-sectors in terms of TE performance.

### CONCLUSION AND POLICY RECOMMENDATIONS

Accounting for a majority of Vietnamese enterprises, SMEs have contributed to the economy in many aspects including employment and income, economic growth, restructuring of the economy and exports. The domestic non-state SMEs have experienced considerable growth since the early 1990s, especially since the introduction of the Enterprise Law in 2000. Vietnamese SMEs have increasingly involved in internationalisation activities as the economy has become more and more integrated to the global economy. Nevertheless, their participation in exporting, subcontracting and cooperation with a foreign partner have been limited. This could be because they have only recently been in these activities or because the benefits from these activities are not significant enough for them to get into these activities. Empirical results from this study suggest that this could be a major reason that domestic private SMEs have focussed most of their activities in the domestic market. In addition, their competitiveness in the international market is quite low.

The findings from this study are important from the viewpoint of economic policy. There is a need for SMEs to upgrade their skills, technology and value adding activities otherwise their competitiveness and efficiency will be severely limited when involving in internationalisation activities. Specifically, policy to simply encourage more SMEs to export is not enough. Policy should target sub-sectors which show that exporting is beneficial such as Food and Beverages, Metal Products, Paper and Printing sub-sectors. Traditional instruments such as trade fairs, marketing studies, and prospective missions are useful in reducing entry costs and facilitating entry of new firms, but they may not be enough to sustain firm competitiveness in foreign markets (Alvarez, 2007).

Similarly, focusing only on increasing the number of SMEs participating in a subcontracting relationship while ignoring quality of the relationship is not enough as it will not benefit Vietnamese SMEs in their TE performance. Thus, a balanced approach to encouraging subcontracting, with both domestic and foreign firms, for manufacturing SMEs is needed.

The results from this study clearly suggest that Vietnamese manufacturing SMEs should work harder to improve the quality of the cooperation with foreign partners to benefit from it and create a win-win solution. They should avoid arrangements which are too restrictive in terms of products and technology. At the same time, they could upgrade machinery, technology and skills so that they are able to participate in higher value adding activities and are less dependent on the foreign counterparts in these aspects. In addition, they could diversify their products and customers in the international markets so that they do not have to rely on a small foreign customer base and limited markets.

Meanwhile, the government can have a role in facilitating and improving the cooperation of domestic SMEs with international partners, by providing information through Vietnamese trade promotion agencies and commercial offices overseas. These agencies should actively seek reliable information about foreign partners and provide it to domestic SMEs. Business associations such as the Vietnam Chamber of Commerce and Industry (VCCI) and Vietnam Association of SMEs (VINASMEs) can also provide information and advice for SMEs in dealing with foreign partners. Survey results indicate that few SMEs seek legal advice when entering into direct export contracts. Less than one third of firms having long term relationships with direct export partners used legal advisors in export contracts in both the 2005 and 2007 surveys. This type of advice can be provided by individuals, firms, government agencies and enterprise development agencies to enhance the cooperation agreements between Vietnamese SMEs and foreign partners.
Figure 1: Enterprise Registration Increases Sharply from 2000

(*) Preliminary data.


Figure 2: Stochastic Frontier and DEA Frontier

Source: Adapted from Smith and Street (2005).
Table 1: Descriptions of Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Y \ (\ln Y)$</td>
<td>The output of the firm, proxied by the sales revenue of the firm (the log form of the output)</td>
</tr>
<tr>
<td>$K \ (\ln K)$</td>
<td>The capital input of the firm, proxied by productive capital (the log form of the capital)</td>
</tr>
<tr>
<td>$L \ (\ln L)$</td>
<td>The labour input of the firm, proxied by the number wage bill of the firm (the log form of the labour input.)</td>
</tr>
<tr>
<td>$ME \ (\ln ME)$</td>
<td>The materials and energy input of the firm, proxied by the costs of materials and energy (the log form of the material and energy input)</td>
</tr>
<tr>
<td>age</td>
<td>Number of years since establishment up to the survey year</td>
</tr>
<tr>
<td>size</td>
<td>Number of wage worker</td>
</tr>
<tr>
<td>comp</td>
<td>Dummy variable indicating if the firm faces competition when</td>
</tr>
<tr>
<td>urban</td>
<td>Dummy variable indicating if the firm is in urban centre when</td>
</tr>
<tr>
<td>hh</td>
<td>Dummy variable indicating if the firm is a household enterprises</td>
</tr>
<tr>
<td>coop</td>
<td>Dummy variable indicating if the firm is a cooperative, collective, or partnership</td>
</tr>
<tr>
<td>ltd</td>
<td>Dummy variable indicating if the firm is a limited liability company, sole proprietorship or joint-stock company</td>
</tr>
<tr>
<td>direx</td>
<td>Dummy variable indicating if the firm is a direct exporter</td>
</tr>
<tr>
<td>foreign</td>
<td>Dummy variable indicating if the firm has long term cooperation with foreign partner</td>
</tr>
<tr>
<td>sub</td>
<td>Dummy variable indicating if the firm is in subcontracting arrangement</td>
</tr>
<tr>
<td>credit1</td>
<td>Dummy variable indicating if the firm has received government assistance in the form of credit at start up</td>
</tr>
<tr>
<td>land</td>
<td>Dummy variable indicating if the firm has received government assistance in the form of land and premise at start-up</td>
</tr>
<tr>
<td>credit2</td>
<td>Dummy variable indicating if the firm has received government assistance in the form of credit during operation</td>
</tr>
<tr>
<td>new</td>
<td>Dummy variable indicating if the firm introduced a new product in the previous two years</td>
</tr>
<tr>
<td>improve</td>
<td>Dummy variable indicating if the firm introduced a major improvement to existing products in the previous two years</td>
</tr>
</tbody>
</table>
Table 2: Observations by Sub-sectors

<table>
<thead>
<tr>
<th>Sub-Sectors</th>
<th>2002</th>
<th>2005</th>
<th>2007</th>
<th>Sector Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Food and Beverages</td>
<td>114</td>
<td>603</td>
<td>434</td>
<td>1,151</td>
</tr>
<tr>
<td>2. Textile, Garment and Footwear</td>
<td>79</td>
<td>196</td>
<td>242</td>
<td>517</td>
</tr>
<tr>
<td>3. Electrical and Electronics Equipment</td>
<td>65</td>
<td>50</td>
<td>79</td>
<td>194</td>
</tr>
<tr>
<td>4. Wood and Furniture</td>
<td>199</td>
<td>463</td>
<td>378</td>
<td>1,040</td>
</tr>
<tr>
<td>5. Chemical, Rubber and Plastic</td>
<td>97</td>
<td>162</td>
<td>175</td>
<td>434</td>
</tr>
<tr>
<td>6. Paper, Printing and Publishing</td>
<td>61</td>
<td>120</td>
<td>124</td>
<td>305</td>
</tr>
<tr>
<td>7. Metal Products</td>
<td>141</td>
<td>398</td>
<td>408</td>
<td>947</td>
</tr>
<tr>
<td>8. Non-Metallic Products</td>
<td>84</td>
<td>158</td>
<td>139</td>
<td>381</td>
</tr>
<tr>
<td>9. Machinery and Equipment</td>
<td>86</td>
<td>78</td>
<td>71</td>
<td>235</td>
</tr>
<tr>
<td><strong>Manufacturing Total</strong></td>
<td>943(*)</td>
<td>2,228</td>
<td>2,050</td>
<td>5,204</td>
</tr>
</tbody>
</table>

*Source:* Author’s calculation from survey data.

*Note:* (*) Observations from separate sub-sectors do not add up to total manufacturing observations as industries for 17 sampled firms could not be determined.

Table 3: Exports and Technical Inefficiency

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2005</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Manufacturing</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Food and Beverages (FB)</td>
<td>–</td>
<td>0</td>
<td>n.a</td>
</tr>
<tr>
<td>Textiles, Garments and Footwear (TGF)</td>
<td>0</td>
<td>n.a</td>
<td>0</td>
</tr>
<tr>
<td>Electrical and Electronics Equipment (EE)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wood and Furniture (WF)</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
</tr>
<tr>
<td>Chemical, Rubber and Plastic (CRP)</td>
<td>0</td>
<td>0</td>
<td>n.a</td>
</tr>
<tr>
<td>Paper, Printing and Publishing (PPP)</td>
<td>–</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Metal Products (MP)</td>
<td>n.a</td>
<td>n.a</td>
<td>–</td>
</tr>
<tr>
<td>Non-Metallic Products (NMP)</td>
<td>0</td>
<td>n.a</td>
<td>n.a</td>
</tr>
<tr>
<td>Machinery and Equipment (ME)</td>
<td>0</td>
<td>n.a</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source:* Author’s calculation.

*Note:* +: Statistically significant with a positive correlation with technical inefficiency; –: Statistically significant with a negative correlation with technical inefficiency; 0: No correlation (statistically insignificant) with technical inefficiency; n.a: Not applicable due to the absence of technical inefficiency.
### Table 4: Subcontracting and Technical Inefficiency

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2005</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Manufacturing</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>Food and Beverages (FB)</td>
<td>0</td>
<td>–</td>
<td>n.a</td>
</tr>
<tr>
<td>Textiles, Garments and Footwear (TGF)</td>
<td>+</td>
<td>n.a</td>
<td>0</td>
</tr>
<tr>
<td>Electrical and Electronics Equipment (EE)</td>
<td>+</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>Wood and Furniture (WF)</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
</tr>
<tr>
<td>Chemical, Rubber and Plastic (CRP)</td>
<td>+</td>
<td>0</td>
<td>n.a</td>
</tr>
<tr>
<td>Paper, Printing and Publishing (PPP)</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>Metal Products (MP)</td>
<td>n.a</td>
<td>n.a</td>
<td>0</td>
</tr>
<tr>
<td>Non-Metallic Products (NMP)</td>
<td>+</td>
<td>n.a</td>
<td>n.a</td>
</tr>
<tr>
<td>Machinery and Equipment (ME)</td>
<td>0</td>
<td>n.a</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source:* Author’s calculation.

*Note:* +: Statistically significant with a positive correlation with technical inefficiency; –: Statistically significant with a negative correlation with technical inefficiency; 0: No correlation (statistically insignificant) with technical inefficiency; n.a: Not applicable due to the absence of technical inefficiency.

### Table 5: Cooperation with Foreign Partners and Technical Inefficiency

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2005</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Manufacturing</td>
<td>0</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Food and Beverages (FB)</td>
<td>0</td>
<td>+</td>
<td>n.a</td>
</tr>
<tr>
<td>Textiles, Garments and Footwear (TGF)</td>
<td>0</td>
<td>n.a</td>
<td>0</td>
</tr>
<tr>
<td>Electrical and Electronics Equipment (EE)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wood and Furniture (WF)</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
</tr>
<tr>
<td>Chemical, Rubber and Plastic (CRP)</td>
<td>0</td>
<td>+</td>
<td>n.a</td>
</tr>
<tr>
<td>Paper, Printing and Publishing (PPP)</td>
<td>+</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Metal Products (MP)</td>
<td>n.a</td>
<td>n.a</td>
<td>0</td>
</tr>
<tr>
<td>Non-Metallic Products (NMP)</td>
<td>0</td>
<td>n.a</td>
<td>n.a</td>
</tr>
<tr>
<td>Machinery and Equipment (ME)</td>
<td>–</td>
<td>n.a</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source:* Author’s calculation.

*Note:* +: Statistically significant with a positive correlation with technical inefficiency; –: Statistically significant with a negative correlation with technical inefficiency; 0: No correlation (statistically insignificant) with technical inefficiency; n.a: Not applicable due to the absence of technical inefficiency.
REFERENCES


