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Abstract

A key question facing Vietnamese policy makers is how to improve the competitiveness of the small and medium enterprises. Among the many initiatives being proposed to improve their competitiveness innovation policy has attracted attention not only from policy makers, but also from researchers and the business community. Innovation in SMEs has also been given special emphasis in a recent declaration in Hanoi by APEC ministers. These initiatives are based on the assumption that innovation can affect a firm's competitiveness and hence export status by increasing productivity (and reducing costs) and by developing new goods for the international market. Improving the export competitiveness of Vietnamese SMEs has become even more pressing given (i) that Vietnam's trade deficit as a percentage of GDP widened significantly to an alarming level of double digit figures in two recent years, 2007 and 2008 and (ii) that the world economic recession has made exporting more challenging due to falling demand. Based on quantitative data analysis and qualitative case-studies, the paper highlights the importance of innovation for the success of Vietnamese firms in their exporting and provides several policy recommendations.

KEY POINTS

- 1) The export sector is a major driving force of Vietnam's economic growth
- 2) Promoting product and process innovation is key to strengthen export opportunities for SMEs which provide the bulk of the country's employment
- 3) Improvements to the tax system, financial incentives for R&D, changes in regulatory regimes, better linkages between research institutions and enterprises, as well as skilling up the workforce are all critical for strengthening the innovation environment.

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I. INTRODUCTION

It is generally believed that developing countries can enhance their growth prospects through export promotion strategies. Underpinning this belief is the export-led growth model postulating a positive relationship between export growth and economic growth. According to economic literature, a large and growing export sector will allow economies with small domestic markets to overcome size limitations and to reap economies of scale. Earnings from exports will provide much needed foreign exchange to import capital goods and intermediate goods, which in turn will improve the productive capacity of the economy. Exposure to increased competition in export markets leads to an improvement in economic efficiency, and finally, exports contribute to productivity gains through diffusion of technical knowledge and learning by doing.

The successful experiences of East Asian economies have provided good examples of the importance of the export sector to economic growth and development, and following in these footsteps Vietnam has adopted an export-oriented strategy. During the last twenty years of economic reform, the export sector has been a major driving force of Vietnam economic growth. In 2007 and 2008, exports represent 70% of Vietnam's GDP.

However, the major problem facing Vietnam is that its private sector—and small and medium enterprises in particular—is not yet sufficiently competitive in the process of international economic integration. Vietnam's development strategy aims to achieve effective economic growth and its success depends to a large extent on the development of the private sector, which consists mainly of SMEs. In the context of Vietnam's integration into the world market culminated by its entry into the WTO at the end of 2006, SMEs have great opportunities to expand by exporting to other markets. At the same time, however, they are also facing tough competition at their doorstep. In order to maintain economic growth, Vietnamese SMEs must be able to compete in the export market. This is now even more pressing given (i) that Vietnam's trade deficit as a percentage of GDP widened significantly to a alarming level of double digit figures in two recent years, 2007 and 2008 and (ii) that the world economic recession has made exporting more challenging due to falling demand.

A key question facing policy makers is how to improve the competitiveness of Vietnam's SMEs. Among the many initiatives being proposed to improve their competitiveness innovation policy has attracted attention not only from policy makers, but also from researchers and the business community. Innovation in SMEs has also been given special emphasis in a recent declaration in Hanoi by APEC ministers. These initiatives are based on the assumption that innovation can affect a firm's competitiveness and hence export status by increasing productivity (and reducing costs) and by developing new goods for the international market.

However, innovation is a relatively new concept in Vietnam, having only been introduced in 1997 with support from IDRC. Therefore, the role and importance of innovation for competitiveness at both the enterprise level and the national level are not fully realized and well understood. The purpose of this paper is therefore threefold. First, it provides an overview of the linkage between innovation and exports. This is of critical importance in the Vietnamese context, as although there is considerable discussion about innovation in general, linkages to the export sector have not been previously explored. Second, the paper highlights the importance of the SME sector and influence of innovation on exporting, drawing on the Vietnam Small and Medium Enterprise Survey conducted in 2005 (SME 2005). We investigate the link between innovation activities and exporting, attempting to answer the question whether more innovative firms are more likely to export. We capture innovation activities in three different ways: a new product innovation, a new production process and a modification of existing products. The case studies of innovation-export nexus also highlight the conclusion we draw from quantitative analysis. Finally the paper discusses policy implications for the SME sector, and identifies a number of concrete steps that key policy actors could undertake to strengthen the innovation environment.

II. INNOVATION AND EXPORT

2.1 Trade and innovation – theoretical background

Innovation and exports relate to measures of national competitiveness at macro and micro levels (Cassiman and Martinez-Ross, 2004). At the macro level, innovation is an important measure for industrial and country-level growth, and exports represent an indication of national competitiveness. At the firm level, innovation is important for the competitive advantage of firms and determines their growth potential.

In addition to comparative advantage stemming from a country's natural resources, economic theories suggest that innovation activities can play an important role for success in international market. International trade models developed by Vernon (1966), Krugman (1979), among others, suggest that innovation is the driving force behind exports. These models suggest that the causation runs from innovation to export. As developing countries imitate the innovative products exported from developed countries, they will later be able to export these matured products back to developed markets. For developed countries, they have to innovate to keep up their exports and income. At the firm level, it has been argued that innovating firms have incentives to expand into other markets so as to earn higher returns from their investment (Teece, 1986). Through innovation, innovating firms will obtain and sustain their competitive advantage domestically and internationally. Therefore we can expect a positive linkage from innovation to exports.

Box 1: Distinguishing between product and process innovation

A general distinction can be made between **product innovation** (including both new product innovation and modification of an existing product) and **process innovation**. Process innovations are a way to improve productivity and reduce production costs, while product innovation gives the innovating firms a competitive advantage. We hypothesize that product innovations and process innovations have a different effect on export performance (see Utterback and Abernathy (1975) and Cassiman and Martínez-Ros (2004)). But often, product innovation and process innovation are linked as newly developed products or modified products often require new production technology (Kirbach and Schmiedeberg 2006).

Innovations are produced by few “**performance-maximizing**” firms, who have strong

technological capability and connection with market, implying that product innovations are firstly produced in the advanced technology countries (Utterback and Abernathy, 1975). For product innovators in smaller and developing countries like Vietnam, exports are likely to be positively affected, as demand in the domestic market is not well developed yet and firms discriminate between domestic and international markets for these novel products for which they do have some market power (Cassiman and Martínez-Ros, 2004).

In the case of process innovations we get a different effect as this type of innovation arrives in typically more mature markets where product innovations introduced by “**sale-maximizing**” firms are often a variation of existing products rather than for creating entirely new products. Process innovations are beginning to build up and along with product innovation they are stimulated by advanced technology (Utterback and Abernathy 1975; Klepper 1996). The effect of process innovation on export to be less than product innovation (Cassiman and Martínez-Ros, 2004). Process innovation helps securing a firm's market position given the characteristics of its product supply. Both modes of innovation are expected to raise firm's propensity to export

With respect to product modification, firms competing in foreign markets may choose to adapt the physical characteristics or attributes of a product and its packaging to fit the needs and desires of consumers in different countries better and so bear additional costs. To be successful, a modified product must add sufficient incremental revenue such that the additional manufacturing and marketing costs that result from adapting the product are recovered. We hypothesize that given Vietnam's current technological position product modification is expected to be the most frequent type of innovation.

Source: Nguyen et al (2008)

2.2 Contribution to Vietnamese economy by SME sector

Vietnam's SME sector plays a key role in the Vietnamese economy. Table 1 presents a clear picture of SME positioning among Vietnamese firms in terms of population and performance over the period of 2000-2005. SMEs consistently account for a large majority of total Vietnamese firms i.e. from 94% of 42,000 firms in 2000 to 97% of more than 110,000 firms in 2005. With regards to observable performance indicators, SMEs employed a rather stable portion of the total laborforce 34%-38% each year and a fluctuating share of capital stock with the peak of 38% in 2000 and its bottom at 29% in 2001. Gross output produced by SMEs has maintained a constant trend at around 45%-49% share of total gross output. In short, SMEs are the backbone of Vietnam's economy and appropriate policies should be directed at this sector in order to improve their performance and contribution to economic development.

TABLE 1 Number and performance of Vietnamese SMEs 2000-2005

Year	2000	2001	2002	2003	2004	2005
1. Total number of firms	42,288	51,680	62,908	72,012	91,755	112,952
2. SMEs (share of total firms)	39,897 (94%)	49,062 (95%)	59,831 (95%)	68,687 (95%)	88,222 (96%)	109,338 (97%)
3. SMEs' share of total labor force	36%	34%	35%	35%	36%	38%
4. SMEs' share of total capital stock	38%	29%	29%	31%	34%	33%
5. SMEs' share of total gross output)	48%	45%	49%	48%	45%	46%

Source: Enterprise Census 2000-2005 of General Statistic Office (GSO) of Vietnam

Note: * previous year =100%

2.3 Innovation and exporting by Vietnam's SME sector

The link between innovation and exports is an important one, but has received little policy or analytical attention in Vietnam to date. What our research identifies, however, is that firms that innovate are more likely to be involved in exports. Table 2 presents innovation and export activities of firms in the 2005 SME survey. Among 2739 surveyed manufacturers, 1113 firms are product innovators, 809 firms are process innovators and 1654 firms are engaged in product modification. The table suggests that innovations are positively correlated with the export decision of firms. As indicated in Table 2, 11% of all the product innovation active firms are exporters, whereas for non-product innovators the rate is only 4%. Similarly, 12% of process innovators compared to just 4% of non-process innovators are involved in exports, and 9% of product adapters compared to 3% of non-product adapter. Across the board, firms engaged in innovation be it product innovation, process innovation or product modification are more likely to export.

TABLE 2 Innovation and export status among SMEs

Type of innovation	Product innovation		Process innovation		Product modification	
	Active	Non-active	Active	Non-active	Active	Non-active
Export status						
Export	117 (11%)	59 (4%)	98 (12%)	78 (4%)	145 (9%)	31 (3%)
Not export	996 (89%)	1567 (96%)	711 (4%)	1852 (96%)	1509 (91%)	1054 (97%)
Sub-total	1113 (100%)	1626 (100%)	809 (100%)	1930 (100%)	1654 (100%)	1085 (100%)
Total surveyed sample (manufacturing only)	2739		2739		2739	

Source: SME Survey, 2005.

In order to establish a causal relationship between innovation and exporting for the case of SMEs in Vietnam, a model linking exports and three measures of innovation, namely (i) product innovation; (ii) process innovation; and (iii) product modification were estimated using the SMEs 2005 survey data (see Nguyen et al 2008). In essence the paper estimates an exporting model specified as follow:

$$Export = \beta_0 + \beta_1 X + \theta_2 Innovation + \varepsilon \quad (1)$$

where *Export* is an indicator taking value of 1 if firm *i* is an exporter in the survey year and 0 otherwise, *X* is a vector which includes firm's characteristics such as firm size, turnover, capital intensity, regional dummies, sector dummies, and ε is an error term. As the dependent variable *Export* is a binary response variable, the equation (1) is estimated as a probit or logit model. *Innovation* in (1) is a generic measure of innovation. In particular in the empirical investigation we consider three measures of innovations

- *Product Innovation*: This is a dichotomous variable that takes the value 1 when the firm introduces new products in the survey year; and 0 otherwise.
- *Process Innovation*: This is a dichotomous variable that takes the value 1 if the firm introduces new production processes/new technology; and 0 otherwise.

- *Product modification*: This is a dichotomous variable that takes the value 1 if the firm introduces any major improvement of existing products or changed specification in the survey year; and 0 otherwise.

Following previous research, we also control for a range of variables in the vector X that possibly affect the decision to export. We also deal with the issue of endogeneity between innovation and export by estimating a first-stage IV equation specified as

$$\text{Innovation} = Z\gamma + u \quad (2)$$

where Z is the vector of instruments. Our strategy is to use the fitted value of innovation obtained after estimating equation (2) as the instrument in equation (1). The regression results show that innovations are important determinants of exporting for Vietnamese small and medium enterprises. All three measures of innovation employed were statistically significant. Our model also indicates that among the three innovation measures, product innovation has the strongest effect on exporting. Our results have important implication in Vietnam context. That is, on top of the comparative advantages that push Vietnam export, a policy to encourage innovation activities to be practiced by SMEs should be in place. This makes more sense in such a SME dominant economy which is integrating into the global market via international trade. Furthermore, it should pay particular focus on national innovation strategy breakdown i.e. the development of new products, the adoption of new production process/technology and on the innovation that modifying existing products.

To complement the quantitative analysis, we also conducted several qualitative case studies on the link between different types of innovation and exporting. The cases are presented in Box 2. Our case studies also highlight the importance all three types of innovation, namely product innovation, process innovation and product modification for the success of exporting to foreign market.

Box 2 Case studies on innovation and exports

1. Product innovation

There are a growing number of examples of new product innovation that have helped Vietnamese enterprises to enter the export market. One good example is that of bamboo-based floor tiles produced by Tien Dong Ltd Company. Due to the falling supply of wood-based input materials, in 2007 the Tien Dong Ltd Company introduced bamboo-based products in place of their traditional wood-based floor tiles. The advantage of the bamboo-based product over the wood-based product is its durability and strength. Tien Dong Company has entered into an agreement with a foreign partner to produce these for export markets.

Another good example is that of Dien Quang joint-sock company's investment in the development of new high end products such as energy-saving bulbs. As a result of this investment in innovation, the company has been able to export its products to European countries.

2. Process innovation

The Vietnam Milk Product Company (Vinamilk) provides an interesting example of process innovation. By importing new technology and equipment from Denmark the company has been able to export its products to new export markets. In 2007 the company was able to export milk-powder to Dubai, Cappuccino coffee to Australia, and many other coffee products to Cambodia and the Philippines. By entering into a joint-venture with the US beer manufacturer, SABMiller, Vinamilk has been able to increase its beverage export by 30% over 2006.

Another case of process innovation comes from the Daso Group which decided to invest in a farm of 250 ha of lemon. The company also sets up a long-term purchase arrangement with farmers. The purpose is to maintain a good supply of input materials to meet its production capacity. By doing this, the company has been able to meet large export orders from the United States of America.

3. Product modification

Thanh Cong textile and garment company is a good example of successful product modification. By modifying its design, color and styles to ensure that they are more amenable to the taste of consumers, the Thanh Cong company has been able to secure large contracts with the American Walmart distributor. In 2006, Walmart placed a very high-value order for the company's pull-over T-shirt (over 1 million pieces), and in 2007 Thanh Cong exports to the US reached USD 24 million.

III. CONCLUSIONS AND POLICY IMPLICATIONS

Our results have important implications for Vietnam's economic development strategy. They suggest that in order to maximize Vietnam's comparative advantage in the export sector, a policy to encourage innovation activities by SMEs should be developed. This is particularly important in such a SME-dominant economy which is integrating into the global market via international trade. Furthermore, such a strategy should pay particular attention to national innovation strategy breakdown i.e. the development of new products, the adoption of new production process/technology and on innovations that modify existing products.

In a modern economy, innovation is crucial for value creation, productivity, export, growth and employment. Innovation will lead to new businesses as well as to the increased competitiveness of existing enterprises. Our analysis has provided empirical evidence that innovation enhances the likelihood of exporting for Vietnamese small and medium enterprises which are the backbone of the economy.

In order to engage more successfully in international trade, Vietnamese small and medium enterprises have to improve their efficiency, productivity and innovation. Like other developing countries, the innovation system in Vietnam is disconnected and fragmented. Therefore, a number of policy recommendations to develop an effective national innovation system can be suggested as follows:

1. At the general level, building an integrated national innovation system in which the link between enterprises themselves and with research institutes is strong, coherent and intimate.
2. Stimulating and supporting enterprise innovation: The government should have policies/programs and schemes that are (i) adapted to different types of enterprises, (ii) tackle the various needs of enterprises: technical, commercial, legal, and (iii) embedded in broader actions aimed at upgrading the overall management of enterprises.
3. Building appropriate research and technology infrastructure: Research activities from basic to more applied need to be adapted to local needs and capabilities.

4. Building the legal and regulatory environment
5. Learning from experience of other countries – other countries in the region such as Taiwan, Korea and Malaysia have been implementing very effective innovation policies. Study tours and knowledge exchange (including some formal institutional arrangement) would be beneficial for Vietnam.

Key Sources

- Cassiman, B. and Martinez-Ros, E. (2004). Innovation and Exports: Evidence from Spanish Manufacturing. *Working Paper*.
- Kirbach M., and C., Schmiedeberg (2006) Innovation and export performance: Adjustment and remaining differences in East and West German manufacturing, mimeo, Department of Economics, University of Ulm.
- Krugman, P. (1979). A Model of Innovation, Technology Transfer, and the World Distribution of Income. *Journal of Political Economy*, 87(2), 253-266.
- Nguyen A, N. Pham, Nguyen C., and N., Nguyen (2008), Innovation and Export of Vietnam's SME Sector, *European Journal of Development Research*,
- Teece, D.J. (1986). Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy. *Ricerche Economiche*, 40 (4), 607-643.
- Utterback, J.M. and Abernathy, W.J. (1975). A Dynamic Model of Process and Product Innovation. in: C. Freeman (editors): *The Economics of Innovation*, Edward Elgar, Aldershot. 1990, pp. 424-441.
- Vernon, R. (1966). International Investment and International Trade in the Product Cycle. *Quarterly Journal of Economics*, 80 (2), 190-207.