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Abstract

We examine the impacts of competitive industry position on firms' export propensity and intensity in China. Drawing on the resource-based view and the structure-conduct-performance paradigm of firm behavior, we investigate whether firms with competitive industry position through cost leadership or differentiation strategy have different export behaviors. We use a longitudinal data of 213,662 manufacturing firms in China from 1998 to 2005 to show that firms that have developed competitive advantages in the domestic market are more likely to export and have higher levels of export intensity. Indigenous and foreign manufacturing firms exhibit different patterns of export behaviors. Foreign firms with differentiation advantages focus on local market expansion instead of seeking opportunity in export markets.

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1. Introduction

In this study, we aim to examine the impacts of competitive industry position on firms' export behaviors in China and whether there are significant differences between indigenous and foreign manufacturing firms. Exporting to a foreign market represents a crucial strategic choice for firms and it is usually the first step to start the internationalization process according to the stages model of internationalization (Johanson and Vahlne, 1977, 1990; Morgan, Kaleka, and Katsikeas, 2004). The globalization and the rapid growth of international trade have further made it imperative for firms to penetrate into foreign markets and seek expansion opportunities. There have been numerous studies on firms' export behavior in the last several decades. Researchers have investigated on the effects of sets of macro- and micro-level variables on export performance (e.g., Cavusgil and Zou, 1994; Holzmuller and Stottinger, 1996; Ito, 1997).

Competitive advantage is a key factor in explaining firms' export behavior because competitive pressure in the home market can keep firms actively pursuing innovation activities, which eventually produces a competitive industry in world trade (Porter, 1985, 1990; Sakakibara and Porter, 2001). If firms' domestic competitive strength enables them to be engaged in exporting, the strength can be leveraged in international markets (Salomon and Shaver, 2005). In addition, Porter (1985) suggests that a firm can create a competitive advantage through a cost leadership or a differentiation strategy. Cost leadership emphasizes cost reduction through cost control and minimization. Differentiation on the other hand emphasizes differentiating firms from their rivals through sales, marketing, and innovation strategies. Therefore, we expect that

firms' competitive advantages have significant impacts on export behavior. There exist some studies investigating the effects of firm capabilities/competencies (Holzmuller and Stottinger, 1996; Ito and Pucik, 1993; Naidu and Prasad, 1994). However, most of them were based on survey data and cross-sectional in nature, leaving a reach gap in regard of the need to test the relationship longitudinally to avoid previous methodological shortcomings (Fernández and Nieto, 2006). Moreover, the majority of previous studies examine firms from Western countries.

In this study, we examine firms' export behavior based on a longitudinal dataset of 213,662 manufacturing firms in China from 1998 to 2005. With its economic reform and transition to a market-based economy, China has become one of the most important export markets in the world. Accompanied with the rapid growth of GDP, China has also achieved a fast growth in its export trade as shown in Table 1. Worldwide exporting reached 119.8 billion US dollars in 2006 and the exporting volume of China was 969.1 billion with a growth rate of 27% (UNCTAD, 2006).

Insert Tables 1 here

Table 2 shows that China is one of the largest trade partners for the major economies in the world and its top three trade partners in 2006 are EU, US, and Japan. Given its significant role in the world trade, the China context provides an excellent research context to study firms' export behavior in developing or transition economies.

Insert Tables 2 here

We examine the influences of the realized strategies in terms of cost reduction and differentiation on the export behavior of manufacturing firms in China. We use cost leadership and differentiation strategies as important measures that explain a firm's export behavior because they reflect explicit use of firms' resources to achieve competitive advantages. We measure cost leadership and differentiation advantages as the extent of deviation of a firm's cost structure and technology levels from the average level of a specific industry. Moreover, foreign firms operating in the China market may have different strategic objectives and consequently different export behavior. Therefore, we further compare the patterns of export behavior of indigenous and foreign manufacturing firms.

2. Theory and Hypotheses

The resource-based view (RBV) focuses on the origins of competitive advantage and addresses why firms in the same industry vary systematically in performance over time (Barney, 1991; Teece, Pisano, and Shuen, 1997; Wernerfelt, 1984). A firm can gain competitive advantage through deploying its valuable, rare, and inimitable resources (Barney, 1991). Recent developments in this domain have differentiated resources and capabilities of firms (Makadok, 2001; Teece, Pisano, and Shuen, 1997). A resource is an observable (but not necessarily tangible) asset that can be valued and traded, such as a brand, a patent, a parcel of land, or a license while a capability is an un-intangible organizational process and can change hands only as part of its entire unit (Makadok, 2001). Performance differences among firms not only result from control of idiosyncratic resources but also from capabilities and competencies that combine and transform available resources into superior customer value (Barney, 1991; Day, 1994).

While the RBV emphasizes firms' internal resources and competencies, the structure-

conduct-performance paradigm (SCP) states that firm performance is determined by characteristics of the external environment and firms' ability to achieve positional advantages through their planned strategies (Porter, 1985). Firms have dependence on the external environment which poses constraints on firms' strategic choices; however firms can manage the dependence by developing competitive strategies accordingly (Cavusgil and Zou, 1994). The RBV and SCP approaches offer explanations of firm performance from different theoretical perspectives. However, these two theories can be combined and synthesized if a dynamic view is adopted to explain the process from firm resources to competitive advantages and performance outcomes (Morgan, Kaleka, and Katsikeas, 2004).

There have been a lot of empirical studies on the determinants of export performance. At the macro-level, researchers have investigated variables including comparative advantage, government policies, exchange rate fluctuations, and domestic market characteristics. Micro-level research turns attention to firm level variables because firm characteristics lead to performance differences and have substantial influences on firms export behavior. Factors identified include export strategies, managerial perceptions and attributes, firm resources, and firm capabilities/competencies, etc. Firm capabilities/competencies appear to be important factors influencing export behavior and previous studies have found a positive relationship between firm competencies and export performance (e.g., Holzmuller and Stottinger, 1996; Ito and Pucik, 1993; Naidu and Prasad, 1994). However, there exist problems that limit previous empirical studies. Previous studies have mainly used small scale survey data and most of them are cross-sectional, which cannot test the casual relationship between firm competencies and export behavior. In this study, we aim to use objective data to measure firms' realized competencies that indicate competitive advantages, and further investigate the link from

competitive advantages to firms' export behavior longitudinally. Following previous literature, we examine two indicators of firms' export behavior, namely export propensity and intensity. Export propensity is defined as whether or not a firm exports to foreign markets and export intensity is defined as the level of export sales in total sales (Calof, 1994; Salomon and Shaver, 2005).

2.1 Competitive Industry Position and Export Behavior

We incorporate two distinct competitive advantages in our study: cost leadership and differentiation. Firms can develop competitive advantages with respect to competitors in a specific industry either through the strategies of cost leadership or differentiation (Porter, 1980, 1985). Firms pursuing a cost leadership strategy aim to enhance performance and increase market shares based on competitive advantages through a low-cost position relative to rivals. In order to achieve cost leadership, firms need to outperform in activities of producing, selling, and delivering products and services to customers and provide consumer values cheaper. Cost leadership requires large scale product facilities, rigorous process improvements, cost reduction through experience, cost control, and cost minimization in R&D, advertising, sales, and services. Because of the ability to match competitors' offerings at lower prices, firms with cost leadership advantages can achieve above-average returns (Porter, 1980, 1985).

Previous studies have provided supportive evidence for the link between competitive strategies and firm performance (e.g., David et al., 2002; Spanos, Zaralis, and Lioukas, 2004). Aulakh, Kotabe, and Teegen (2000) suggest that firms from emerging economies can use cost-based strategies to enhance export performance in developed countries because they possess comparative advantages in terms of low costs of labor and raw materials. Firms with cost

leadership advantages can leverage their domestic competitive advantages to international markets. Therefore, we expect that those firms (indigenous and foreign) are more likely to become exporters and have higher export volumes. Therefore, we hypothesize,

H1: Firms with cost leadership advantage are more likely to export and have higher levels of export intensity.

Firms pursuing differentiation strategies on the other hand emphasize building a product or service that customers see as unique and are willing to pay a premium price (Porter, 1980, 1985). Differentiation strategies can be realized through creating strong brand equity, continuous innovation, advanced technology, and superior customer services. Firms need to make investments in costly activities like extensive R&D, product design and marketing management. If firms can successfully differentiate themselves from rivals in the market place, they can enjoy above-market prices because differentiation strategies can create high customer loyalty.

Firms can achieve competitive advantages through differentiation strategies, which will in turn enhance firm performance. Compared with advantages through cost leadership, differentiation advantages are more difficult for competitors to imitate and hence more likely to be sustained (Barney, 2002). We expect that competitive advantages through differentiation strategies can be applied to exporting markets and affect firms' export behavior.

H2: Firms with differentiation advantage are more likely to export and have higher levels of export intensity.

2.2 Export Behavior of Foreign Firms

In the last two decades, China has become one of the largest and fastest-growing destinations for foreign direct investments. The high economic growth, huge market potential,

and low labor cost advantages have attracted numerous foreign firms to set up manufacturing operations in China. In our sample, we incorporate both indigenous and foreign manufacturing firms. Multinational firms make decisions on production and output allocation differently from domestic firms (Salomon and Shaver, 2005). Multinational firms operating in China basically have two major strategic objectives: market seeking and resource seeking. Market-seeking firms usually increase commitments gradually and aim to become local players for local sales eventually. On the contrary, some multinational firms establish sourcing facilities in China, which act as exporting platforms for the global network. Different strategic objectives of foreign firms have substantial effects on their export behaviors. We expect that if foreign firms focus on sales outside China, they are more likely to pursue cost leadership advantages while market-seeking firms are more likely to pursue differentiation strategies to establish unique positions in the domestic market. Therefore, we consider the possible different export behavior of indigenous and foreign manufacturing firms and hypothesize the following

H3a: Foreign firms with cost leadership advantage are more likely to export and have higher levels of export intensity.

H3b: Foreign firms with differentiation advantage are less likely to export and have higher levels of export intensity.

3. Data and Research Method

Our data source is the Annual Census of Chinese Industrial Firms (ACCIF), 1998-2005, which is conducted by the National Bureau of Statistics of China. It covers all industrial state-owned enterprises and non-state-owned enterprises with at least 5 million RMB annual sales. The data set provides detailed information on firms' identification, assets, liabilities, and capital structure, sales, financial performance, total shipments, and exported shipments, among others.

The ACCIF data set covers three major industrial sectors: (1) mining, (2) manufacturing, (3) production and distribution of electricity, gas and water. In this paper, we focus on the manufacturing sector only because other two sectors are neither export intensive nor major exporting sectors in China. The data set is representative and suitable for studying export strategy of manufacturing firms in China. Table 3 shows the numbers of manufacturing enterprises with valid total shipments and exported shipments information vary from 141 thousands to 243 thousands for various years. China's total export increased dramatically from 184 billion US dollars in 1998 to 762 billion US dollars in 2005, while the sample used in the paper consistently represents around 70% of China's total export during the period.

Insert Tables 3 here

Dependent variables

Following the literature, we use two dependent variables (export propensity and export intensity) to measure export behavior of firms (Zhao and Zou, 2002; Fernández and Nieto, 2006). Export propensity equals one if a firm export a positive proportion of its output in a specific year, zero otherwise. Export intensity equals the ratio of export to output sold by a firm in a specific year.

Independent variables

We measure realized strategies of cost leadership strategy (CL) and differentiation strategy (DF). We proxy a firm i 's competitive strategies as the divergent of its cost structure and differentiation levels from the typical levels of the industry j at year t . In constructing the industry-year median, we exclude the firm itself. We divide this deviation by the range of CL and DF in each industry-year, thus bound these proxies by minus one and one. MacKay and

Phillips (2005) used a similar proxy to measure firms' relative capital-labor ratio in an industry.

The measures of cost leadership and differentiation can be expressed as follows, respectively:

$$CL_{i,t} = - \left\{ \frac{(CL)_{i,j,t} - \text{median}_{-i,j,t}(CL)}{\text{range} \left(\left((CL)_{i,j,t} - \text{median}_{-i,j,t}(CL) \right) \forall i \in j,t \right)} \right\} \in [-1,1],$$

$$DF_{i,t} = \frac{(DF)_{i,j,t} - \text{median}_{-i,j,t}(DF)}{\text{range} \left(\left((DF)_{i,j,t} - \text{median}_{-i,j,t}(DF) \right) \forall i \in j,t \right)} \in [-1,1]$$

For competitive advantages of cost leadership, we use two indicators: production costs to total revenue (PCR) and capital intensity measured by fixed assets to employee ratio (FAE). The main dimension of cost leadership strategy is efficiency, which can be further divided into cost efficiency and asset parsimony. Following previous literature (Nair and Filer, 2003; Berman et al., 1999), we use PCR and FAE to measure the extent to which firms follow an efficiency strategy in deploying the minimum levels of costs and assets. The lower the levels of these two variables are, the lower degrees will be inputs per unit.

For competitive advantages of differentiation, we have two indicators of new products to total products ratio (NPP) and intangible assets to total fixed assets ratio (IAA). We approximate differentiation strategies to measure firms' willingness to spend resources on innovation and marketing efforts to differentiate from competitors (David et al., 2002).

To measure competition strategies of firms, we use average values of those variables in previous three years for firms as proxies. We first construct samples of firms that appeared in data during 2001-2005 and previous three years of these specific years. In the construction of the samples, we exclude observations with missing or obviously unreasonable values which are essential to construct variables for analyses (for example, some firms report more export

shipment than total shipment). Numbers of firm for years are 41,893 in 2001; 42,964 in 2002, 42,710 in 2003; 40,275 in 2004; and 45,780 in 2005. We report descriptive statistics of variables and the correlation matrix in Table 4.

Insert Tables 4 here

4. Empirical Results

We estimate the export propensity behavior with a logistic model and export intensity with a Tobit model. We add control variables in the analysis, including industry growth rate, firm size, and firm age. We also incorporate industry and year fixed effects in the estimation for robustness.

Table 5 reports the effects of competitive industry position of firms' export propensity and intensity. The results suggest that both production cost (PCR) and capital intensity (FAE) have negative effects on export propensity and intensity ($p < .001$). Lower values of PCR and FAE indicate firms' competitive advantages in cost leadership. That is, firms with realized advantages of cost leadership are more likely to export and have high levels of export intensity. Hence, H1 is supported. NPP and IAA are significantly related to export propensity and intensity ($p < .001$), which shows that firms with advantages of differentiation are more likely to be involved in export markets and have high export intensity, supporting H2.

Insert Tables 5 here

Table 6 reports both export propensity and export intensity models of the interaction effects. The results suggest that the interaction item between PCR and the dummy variable of

foreign firms has a significantly negative effect on export intensity but not on export propensity. It appears that foreign firms with advantages of cost leadership have higher export intensity, which partially supports H3a. The interaction item between new products to total products (NPP) and foreign firms has a negative and statistically significant effect on export propensity and intensity ($p < .001$), indicating that foreign firms with advantages of differentiation are less likely to export and have lower levels of export intensity. Therefore, H3b is supported.

Insert Tables 6 here

5. Discussion and Concluding Remarks

In this study, we investigate the impacts of firms' competitive position on export behaviors indicated by export propensity and intensity. Based on the resource-based view (RBV) and the structure-conduct-performance (SCP) paradigm of firm behavior, we theorize that firms' capability and competencies enable firms achieve competitive advantages within an industry, which consequently have substantial effects on firms' export behavior. The results provide strong support for the effects of realized competitive advantages of cost leadership or differentiation on firms' export behavior using a longitudinal data set manufacturing firms in China from 1998 to 2005. Indigenous and foreign manufacturing firms exhibit different patterns of export behavior. That is, foreign firms with differentiation advantages focus on local market expansion instead of seeking opportunity in export markets.

The RBV and the SCP paradigm dominate the conceptual landscape of the determinants of firm performance. Competitive advantages realized in the domestic market can help firms compete in international markets (Porter, 1990). In the literature, there exist a lot of empirical studies examining the effects of firm capability/competencies on export behavior (e.g.,

Holzmuller and Stottinger, 1996; Ito and Pucik, 1993; Naidu and Prasad, 1994). However, most of previous studies employ survey data, which exhibit perception biases for the measures of competitive advantages. Moreover, cross-sectional data hinders testing the relationship between firm competitive advantages and export behavior over time. In this study, we rely on a longitudinal data set of manufacturing firms in China to capture firms' realized competitive advantages using objective measures and investigate the impacts of realized strategies on firms' export behavior over time. Competitive advantages through cost leadership or differentiation enable firms to compete in the export market and achieve high levels of export intensity. The results further substantiate the salient roles of firm competitive advantages in explaining firm behavior.

Our results indicate different patterns of export behavior between indigenous and foreign manufacturing firms. China provides an appropriate setting to examine competitive advantages and export behavior because it is during a dramatic transformation process with a stiff competition. As the largest transition economy, China has attracted a lot foreign direct investments and foreign invested firms may have different strategic objectives and consequently exhibit different export behavior. The large market size of China allows companies in the same industry pursuing various competition strategies-cost leadership and differentiation. This study shows that foreign ventures with differentiation advantages focus on local market expansion instead of seeking opportunity in exporting markets. Salomon and Shaver (2005) show that export and domestic sales are substitute for each other. Our study further suggests export behavior of foreign invested firms depends on their strategic objectives. Therefore, attention should be given to the differences between domestic and foreign invested ventures when conducting firm level export research.

There are several limitations of this study, which also representing further research directions in this domain. First, we examine the effects of competitive advantages on firms' export behavior through measuring firms' realized competitive advantages through cost leadership and differentiation strategies. Because of the limitation of secondary data, we cannot investigate the dynamic process from resources to capabilities and competitive advantages directly. Second, there has been policy changes in China related to the export behavior as China became a member of the World Trade Organization. The changes in policies including tariff reduction and its domestic market opening should have some impacts on the export behavior on both domestic and foreign firms. Finally, external environment variables also have significant effects of firms' export behavior. It is possible that firms with different competitive advantages react to the influences of external environment in different ways. Therefore, it will be worthwhile to investigate the interplay and interrelationship between environmental variables and firm capabilities/competitive advantages.

Table 1
GDP and Export Volume of China

	2001	2002	2003	2004	2005	2006
GDP	1,196	1,300	1,414	1,932	2,229	2,677
Exports	266.1	325.6	438.2	593.3	762.0	969.1

Unit: US\$ billion

Source: China Statistical Yearbook, various years.

Table 2
China's Top Trade Partners in 2006

Rank	Country	Total trade	% Total Trade	% GDP
1	EU	272	15.5	10.2
2	US	263	14.9	9.8
3	Japan	207	11.8	7.7
4	HK	166	9.4	6.2
5	ASEAN	161	9.1	6.0
6	S. Korea	134	7.6	5.0
7	Taiwan	108	6.1	4.0
8	Russia	33	1.9	1.2
9	Australia	33	1.9	1.2
10	India	25	1.4	0.9

Unit: US\$ billion

Source: <http://zhs.mofcom.gov.cn/aarticle/Nocategory/200702/20070204344141.html> and <http://zhs.mofcom.gov.cn/tongji.shtml>.

Table 3
Representativeness of the sample for China's total export

	1998	1999	2000	2001	2002	2003	2004	2005
Number of firm in the cross-sectional sample	144,161	140,903	142,549	152,345	162,769	178,467	156,017	243,332
Export in the sample	126.5	135.1	171.2	191.7	237.4	320.0	395.9	581.6
China's total export	183.7	194.9	249.2	266.1	325.6	438.2	593.3	762.0
Percentage of China's total export	69%	69%	69%	72%	73%	73%	67%	76%

Unit: US\$ billion

Note: China's total exports come from China Statistics Yearbooks for various years.

Table 4
Descriptive Statistics and Correlations

	1	2	3	4	5	6	7	8
1. Production costs ratio	1.00							
2. Capital intensity	.125 ^{***}	1.00						
3. New product ratio	.094 ^{***}	.094 ^{***}	1.00					
4. Intangible assets ratio	.102 ^{***}	.162 ^{***}	.073 ^{***}	1.00				
5. Foreign firms	.038 ^{***}	.219 ^{***}	-.031 ^{***}	.012 ^{***}	1.00			
6. Industry growth rate	.009 ^{***}	.005 ^{**}	.033 ^{***}	-.013 ^{***}	.043 ^{***}	1.00		
7. Firm size	-.039 ^{***}	.331 ^{***}	.198 ^{**}	.045 ^{***}	.153 ^{***}	.061 ^{***}	1.00	
8. Firm age	.065 ^{***}	-.041 ^{***}	.081 ^{***}	.022 ^{***}	-.157 ^{***}	.009 ^{***}	.051 ^{***}	1.00
Mean	.043	.043	.038	.031	.253	.145	1.206	2.401
S.D.	.153	.115	.130	.081	.435	.077	4.326	.629

*** p<.001, ** p<.01, * p<.05, N=203,853

Table 5
Effects of Industry Position on Export Propensity and Intensity

<i>Independent Variables</i>	Export Propensity	Export Intensity
Intercept	-8.51*** (.77)	-1.22*** (.04)
Production costs ratio	-.61*** (.04)	-.35*** (.01)
Capital intensity	-1.01*** (.05)	-.37*** (.01)
New product ratio	1.23*** (.04)	.19*** (.01)
Intangible assets ratio	1.41*** (.07)	.30*** (.02)
Foreign firms	1.57*** (.02)	.47*** (.00)
<i>Control Variables</i>		
Industry growth rate	-.54*** (.14)	-.15*** (.03)
Firm size	.62*** (.01)	.11*** (.00)
Firm age	.18*** (.01)	.02*** (.00)
R square	.35	---
Log Likelihood	86,922.28	-109,730.46
Concordant	86%	---
Number of Observations	203,853	203,853

*** p<.001, ** p<.01, * p<.05

Table 6

**Model Analyzing Interaction Effects of Foreign Firms
with Production Cost and New Products**

<i>Independent Variables</i>	Export Propensity		Export Intensity	
Intercept	-8.49 ^{***} (.77)	-8.48 ^{***} (.77)	-1.22 ^{***} (.04)	-1.20 ^{***} (.04)
Production costs ratio	-.60 ^{***} (.04)	-.62 ^{***} (.04)	-.34 ^{***} (.01)	-.35 ^{***} (.01)
Capital intensity	-.96 ^{***} (.06)	-1.02 ^{***} (.06)	-.38 ^{***} (.02)	-.37 ^{***} (.01)
New product ratio	1.22 ^{***} (.04)	1.15 ^{***} (.04)	.19 ^{***} (.01)	.20 ^{***} (.01)
Intangible assets ratio	1.41 ^{***} (.07)	1.40 ^{***} (.07)	.29 ^{***} (.02)	.29 ^{***} (.02)
Foreign firms	1.57 ^{***} (.02)	1.56 ^{***} (.02)	.46 ^{***} (.00)	.47 ^{***} (.00)
Production costs ratio × Foreign firms	-.16 (.08)	---	-.06 ^{***} (.77)	---
Capital intensity × Foreign firms	-.19 (.10)	---	.01 (.03)	---
New product ratio × Foreign firms	---	-1.22 ^{***} (.10)	---	-.39 ^{***} (.02)
Intangible assets ratio × Foreign firms	---	.11 (.17)	---	-.00 (.04)
<i>Control Variables</i>				
Industry growth rate	-.54 ^{***} (.14)	-.54 ^{***} (.14)	-.15 ^{***} (.03)	-.15 ^{***} (.03)
Firm size	.62 ^{***} (.01)	.62 ^{***} (.01)	.11 ^{***} (.00)	.11 ^{***} (.00)
Firm age	.18 ^{***} (.01)	.18 ^{***} (.01)	.02 ^{***} (.00)	.02 ^{***} (.00)
R square	.35	.35	---	---
Log Likelihood	86,930.09	87,056.94	-109,725.90	-109,588.32
Concordant	86%	86%	---	---
Number of Observations	203,853	203,853	203,853	203,853

*** p<.001, ** p<.01, * p<.05

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