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Ownership Structure of Firms and Their Export Performance: Evidence from Korea

Sangho KIM^{*} and Donghyun PARK⁺

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Abstract

The central objective of our paper is to empirically examine the relationship between the ownership structure of firms and their export performance using data from Korea. Due to growing globalization, export performance has become a highly influential determinant of firm performance. While a large and growing empirical literature investigates the relationship between the ownership structure and overall performance of firms, there are almost no studies which delve into the issue of whether the concentration of ownership has a positive or negative effect on export performance. The primary contribution of our study is to help remedy this serious gap in the empirical literature on ownership and performance. Our empirical results indicate that firms with more concentrated ownership are more likely to be exporters and export more.

Key words: Exports, ownership structure, logit analysis, Tobit regression, Korea

JEL Classification Codes: F10, G30, D80

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1 Introduction

The growing globalization of the world economy means that firms are increasingly looking abroad for growth and profits. The postwar era has witnessed an explosive growth of world trade due to sharp reduction of trade barriers associated with multilateral GATT-WTO liberalization and transportation costs stemming from technological progress. The growing integration of the world's economies is equivalent to the evolution of fragmented national markets toward a single global market. In this environment of globalization, the most successful firms are firms which not only perform well in the domestic market but also perform well in overseas markets. This is true not only for firms from small developing countries which face the constraint of limited domestic markets and thus must export to realize economies of scale but also for large well-established firms from big developed countries. Due to the maturity and slow growth of their own markets, the latter group of firms are increasingly turning to fast-growing emerging markets such as China and India to maintain their momentum. The growing blurring of borders and globalization of markets means that the capacity to export is set to become an even more central ingredient of corporate success in the future.

The ability to export is an increasingly influential determinant of not only corporate performance but also the performance of countries as a whole. That is, the ability of a country's firms to compete successfully in the global market will have a major bearing on the country's overall economic success. East Asia's export-oriented industrialization is a well-known example of how poor countries with small domestic markets can leverage the much larger global market to achieve rapid structural transformation from agriculture to manufacturing and achieve sustained rapid growth. The wave of the region's exportoriented industrialization kicked off in Japan and spread to the NIEs – Hong Kong, Korea, Singapore and Taipei – before engulfing the ASEAN, in particular Indonesia, Malaysia and Thailand, and subsequently China and Viet Nam. India's improved performance in recent years also mirrors its deepening integration into the world economy although interestingly, services rather than manufacturing has become the mainstay of its exports. While the correlation between export prowess and overall performance is far from perfect – as evident in the prolonged stagnation of Japan, an export juggernaut – the most dynamic economies tend to be successful exporters. This is hardly surprising since exporting requires international competitiveness. At the firm level, exposure to intense competitive pressures in the global market requires firms to be efficient and productive. While globalization has opened up huge opportunities for firms to grow through overseas expansion, only internationally competitive firms can take advantage of such opportunities. Other things equal, an economy which has lots of internationally competitive firms will be able to export more goods and services.

According to the corporate governance literature, a firm's ownership structure affects its performance because it shapes its objectives and agent incentives. In a seminal paper, Berle and Means (1932) proposed a simple straightforward intuitive explanation for the relationship between a firm's ownership structure and its performance. A manager tends to pursue his/her own interest rather than owners' profits in the absence of adequate monitoring. This conflict of interest is known as the agency problem. When ownership is widely dispersed, owners do not face strong incentives to engage in monitoring the management since they incur high monitoring costs but capture only a small share of the benefits of monitoring. All owners thus face an incentive to free ride on the monitoring of

other owners, which means that no owner faces an incentive to monitor the manager. This line of reasoning implies that firms with more concentrated ownership will be more closely monitored and thus perform better than firms with more diffuse ownership. At the same time, there are theoretical reasons for why concentrated ownership may adversely affect corporate performance. For example, a dominant shareholder can expropriate firm resources to his benefit at the expense of minority shareholders [Joh (2003)].

In theory, the ownership structure of a firm can have either a positive or negative impact on its performance. Therefore, whether the effect of ownership structure is beneficial or harmful for performance is ultimately an empirical question which needs to be resolved through empirical analysis. A large and growing empirical literature has sprung up to examine the issue. The literature, which includes Demsetz and Lehn (1985), Morck, Shleifer and Vishny (1988), McConnell and Servaes (1990), and Hermalin and Weisbach (1991), fails to uncover any definitive pattern. A number of additional studies have elaborated upon the empirical methodology. For example, in order to account for firm heterogeneity, Himmelberg, Hubbard and Palia (1999) included firm-specific control variables and Griliches and Hausman (1986) applied the fixed-effects model to panel data. However, the overall evidence on the relationship between corporate ownership structure and corporate performance remains mixed and inconclusive.

The central objective of our paper is to empirically examine the relationship between the ownership structure of firms and their export performance. As noted earlier, export performance is a highly influential determinant of overall corporate performance due to the growing globalization of the world economy. At the same time, there are strong theoretical grounds for a relationship between a firm's ownership structure and its performance. While a large and growing empirical literature investigates the relationship between ownership structure and overall performance, there are almost no studies which delve into the relationship between ownership structure and export performance. This is surprising and unfortunate given the large and growing role of export performance in overall performance. More specifically, we empirically examine whether concentrated ownership is more beneficial or harmful for export performance than diffuse ownership. Empirical analysis of the determinants of firm-level exports has significant implications not only for firms but for countries since the ability to export is a major determinant of national economic success in a globalized world. The primary contribution of our study is to help remedy a serious gap in the empirical literature on the relationship between corporate ownership structure and corporate performance. We do so by empirically exploring the effect relationship between ownership and exports using Korean data.

In the context of the nexus between the ownership structure of firms and their export performance, the Korean experience is especially interesting for a number of reasons. At a broader level, Korea is a well-known example of highly successful export-led growth, along with many other East Asian countries. Underlying Korea's export prowess is the phenomenal success of Korean companies such as Samsung and Hyundai in selling their products to the rest of the world. At the same time, those same companies, which often started out as family-owned organizations, have been blamed for the severe financial and economic crisis which Korea suffered during 1997-1998 Asian crisis. The exercise of managerial control by the owner families rather than professional managers may have contributed to a deterioration of corporate governance and deterioration in the overall quality of investment. In light of Korean firms' success as exporters and a possible link between their ownership structure and performance, it would be interesting and meaningful to examine the effect of ownership structure on their export performance.

The rest of the paper is organized as follows. Section 2 reviews the empirical literature on the relationship between the ownership structure of firms and their export performance. Section 3 outlines the conceptual basis for a relationship between the ownership structure of a firm and its export performance, and presents a theoretical model which captures the relationship. Section 4 describes the data and variables used in the empirical analysis, and Section 5 reports and discusses the main findings of the analysis. Section 6 brings the paper to a close with some concluding observations.

2 Empirical Literature on the Relationship Between Firms' Ownership Structure and Export Performance

As noted earlier, there is a large and growing empirical literature which delves into the relationship between the ownership structure of firms and their export performance. In contrast to this rich literature, there are only a few studies which investigate the nexus between ownership and exports. In this section, we review those studies.

Cole, Elliot and Virakul (2010) investigate the relationship between firm heterogeneity and a firm's decision to export, using the annual survey of Thai manufacturing firms from 2001 to 2004. The study breaks down FDI by country of origin to assess whether there are major differences in the behavior of multinationals from different regions. They find that foreign-owned firms are more likely to export than domestic firms. They further find that the propensity to export differs country of ownership. In addition, more productive firms are more likely to export, and sunk entry costs and firm characteristics are important determinants of the propensity to export. According to the study, the heterogeneous behavior of multinationals from different countries implies that in the context of attracting inward FDI, policies targeting specific regions or countries can be more effective than general tax concessions or the establishment of special economic zones which are open to all foreign investors.

Ngoc and Ramsetter (2009) analyze data on multinational firms in Vietnam to examine the relationship between foreign ownership and exports in the Vietnamese manufacturing sector. They find that companies with very high share of foreign ownership – i.e. 90% or more foreign-owned – make a disproportionate contribute to Vietnam's manufacturing exports. Their contribution is especially evident in the apparel, footwear and electric machinery industries. More generally, the export propensity of such heavily foreignowned firms tends to be markedly higher than in other foreign-owned firms, even after controlling after industry affiliation, firm size, vintage, and capital intensity. However, the relationship between foreign ownership share and export propensity varies substantially across industries and years.

A number of additional empirical studies examine the relationship between ownership structure and export performance. Using a data set of 434 foreign-invested firms in Poland, Hungary, Slovenia, Slovakia and Estonia, Filatotchev, Stephan and Jindra (2008) find that foreign investors' ownership and control are positively associated with export intensity. They also find that foreign ownership and control are complementary in terms of their effect on export intensity. Analyzing a data set of 205 clothing enterprises in Sri Lanka, Wignaraja (2008) examines the link between firm-level export performance, foreign ownership and the acquisition of technological capabilities. His econometric analysis indicates that foreign ownership and a number of other variables is positively

associated with export shares. In an analysis of the Estonian and Slovenian manufacturing sectors, Rojec, Damijan and Majcen (2004) find evidence of significantly higher export propensity among foreign firms relative to domestic firms. In further analysis, they find that this difference is due to structural differences such as different factor utilization efficiency and productivity levels. Using a data set which consists of both local and foreign auto parts firms in seven East Asian economies, Rasiah (2007) finds a strong positive relationship between foreign ownership and export intensity. He interprets this finding as indicating that foreign firms enjoy better access to major export markets than local firms. In a study of the relationship between foreign ownership, technological intensity and export intensity in Indonesia's auto parts, electronics and garment industries, Rasiah (2005) finds that foreign firms enjoyed higher export incidence and technological intensities than local firms in all three industries. Finally, in an analysis of foreign ownership, technology and electronic exports from Malaysia and Thailand, Rasiah (2003) finds that while there is a statistically significant positive relationship foreign ownership and exports, there is no significant relationship between foreign ownership and technological capabilities.

To summarize our literature review, it should be clear that the empirical literature on the relationship between the ownership structure of firms and their export performance is quite limited. More importantly, this limited literature effect focuses on the effect of foreign ownership on export performance. Some studies compare the export performance of foreign-owned firms versus domestic firms whereas others compare the export performance of firms with different shares of foreign ownership. None of the studies delve into dimensions of ownership structure other than foreign ownership. In particular, the studies do not look at the effect of ownership concentration on export performance. However, there are conceptual grounds for believing that whether a firm's ownership structure is relatively concentrated or diffuse will influence its success as an exporter. The underlying intuition is that exporting is fundamentally risky activity, as will be explained in greater detail in the next section.

3 Conceptual Overview and Theoretical Model

In this section, we first outline the conceptual basis for a relationship between the ownership structure of a firm and its export performance, and then present a formal theoretical model which captures the relationship.

3.1 Conceptual Overview

For firms, entering the export market is a high-risk activity that involves sunk costs, revenue volatility due to exchange rate fluctuations, limited knowledge of market conditions, and tougher competition. The agency problem influences a firm's export decision-making through attitude toward risk. If two firms are identical except in ownership structure, the manager of a firm owned by small number of shareholders will try to increase the firm's value by venturing into export markets which have high growth potential. At the same time, fast-growing foreign markets expose the firm to greater risk than the domestic market due to asymmetric information. The manager of a firm with less concentrated ownership will try to minimize risk and thus concentrate on the domestic market. This manager wants to achieve concrete results in a short period by focusing on the less risky domestic market rather than the more risky foreign market. The implication is that firms with more concentrated ownership are more likely to export.

This study will hypothesize that manager's preferences toward risk are related with its

ownership structure. In a firm with a diffuse ownership structure, the manager maximizes his own interests rather than shareholders' profits by venturing into the foreign market. The manager will maximize his expected utility from the firm's profits by avoiding risk. However, in a firm with concentrated ownership, the manager represents the dominant shareholder's interest and thus maximizes the firm's expected profits rather than his own expected utility. Therefore, the manager of such firms bears the risks associated with foreign markets. Risk preference has crucial implications for a firm's export decision since exporting is a fundamentally risky activity. Breaking into the export market requires a large sum of up-front sunk costs, including adapting products to the foreign consumer preferences, complying with foreign government regulations, and building distribution networks. Expected profits are subject to high risks due to limited information about foreign demand and exchange rate fluctuations. In these circumstances, the decision to export depends mostly on costs and expected profits for firms with concentrated ownership structure but risk attitudes for firms with dispersed ownership.

3.2 Theoretical Model

In this sub-section, we develop a theoretical model based on the basic intuition discussed above. Let's consider a manager who has to choose whether to export or not. He can either sell all his products in the domestic market or export some of them to the foreign market. To enter the foreign market, a firm has to incur fixed costs to adapt its products to foreign consumers and regulations, establish a distribution network, and promote and advertise its products. Furthermore, the foreign market is assumed to be riskier than the domestic market due to asymmetric information. Under the circumstances, the manager has to maximize the expected value of the utility of the firm's profits, $E[U(\pi)]$, rather than the expected value of profits, $E(\pi)$, if there is no perfect insurance market to cover all export risks. Let's assume the manager has a constant absolute risk aversion (CARA) type of utility function. The optimization problem then becomes:

Maximize:
$$E[U(\pi)] = E[-\exp(-\alpha\pi)] = -\exp\left[-(\alpha E(\pi) - \frac{\alpha^2}{2}var(\pi))\right]$$
 (1)

where " α " represents the Arrow-Pratt measure of absolute risk aversion and $\alpha = -U''/U'$. Thus, increase in α increases the degree of risk aversion for a manager. We hypothesize that a manager becomes more risk averse as the ownership of the firm gets less concentrated due to agency problem.¹ Then, the absolute risk aversion can be denoted as a function of firm's ownership concentration rate (φ), and let's assume $\alpha = 1/\varphi$ to represent the negative relationship between ownership concentration and risk aversion. The second equality of (1) derives from the assumption that the error term of the profits, π , are normally distributed, and shows that the manager has to maximize [$\alpha E(\pi) - \frac{\alpha^2}{2} \operatorname{var}(\pi)$].

Non-exporting firms earn profits only from the domestic market that are equal to $\pi_h + \varepsilon_h$, while exporting firms have additional profits from the foreign market, amounting to $\pi_f - S + \delta \varepsilon_f$. Here subscripts h and f denote home and foreign country, respectively, and S is the fixed or sunk costs required to enter the foreign market.² Error

¹ In this model, manager's share holding is assumed to be distributed randomly across firms. For example, a manager might own all shares of the firm or no shares. In any case, the manager's ownership doesn't affect the outcome of the model, because the model hypothesizes that a manager has to pay greater attention to shareholder interest as ownership gets more concentrated.

 $^{^{2}}$ For simplicity, production costs other than foreign sunk costs needed to enter the market are all ignored. The model can be easily extended to include other costs. However, doing so does not affect the basic results.

terms of the profits in the domestic market and foreign market are both assumed to be normally distributed, $\varepsilon_j \sim N(0, 1)$, for j=h and f, but the foreign error term is magnified by positive constant δ , which represents greater risk. The two error terms are assumed to be correlated with correlation coefficient ρ .³ Firm's profits (π) depend on whether a firm exports or not as follows:

$$\Pi = \begin{cases} \pi_{\rm h} + \varepsilon_{\rm h} & \text{for domestic firms} \\ (\pi_{\rm h} + \varepsilon_{\rm h}) + (\pi_{\rm f} - S + \delta\varepsilon_{\rm f}) & \text{for exporters,} \end{cases}$$
(2)

Firms will decide to enter the foreign market if profits from exporting are greater than those from not exporting. From equation (1) and (2), this condition can be written as:

$$\pi_{\rm h} + \pi_{\rm f} - S - \frac{\alpha}{2} (1 + \delta^2 + 2\delta\rho) \ge \pi_{\rm h} - \frac{\alpha}{2}$$
 (3)

Profits for both exporters and non-exporters are determined by mean and variance, indicated in the third term in (1). Non-exporters have profits only from the domestic market, normally distributed with mean π_h and variance one, while exporters have total profits normally distributed with mean $\pi_h + \pi_f - S$ and variance $1 + \delta^2 + 2\delta\rho$.

Condition (3) can be shortened as:

$$\pi_{\rm f} - S \ge \alpha \left(\frac{\delta^2}{2} + \delta \rho\right) = \frac{1}{\varphi} \left(\frac{\delta^2}{2} + \delta \rho\right). \tag{4}$$

This condition implies that firm's probability of entering the foreign market increases with an increase in ownership concentration, and decreases with an increase in fixed costs, a degree of risk aversion, the riskiness of the foreign market, and correlation between profits from the two markets. Notice that decrease in the correlation lowers the

³ Notice that π_h and $\pi_f - S$ are independently determined. This is based on an implicit assumption of constant returns to scale in production both at home and abroad. An alternative implicit assumption is that the two markets are segmented.

risk of entering the foreign market because firm's profits are diversified through exports, while an increase in the correlation rate reduces such diversification effects.⁴

To illustrate how ownership concentration affects firm's decision-making about entering the export market, let's consider two managers who manage firms with different concentration rates, φ_1 and φ_s ($\varphi_1 > \varphi_s$). A manger in a firm with a high concentration rate φ_1 will be less risk averse with smaller absolute risk aversion $\alpha_1 = 1/\varphi_1$ than a manger of a firm with a low concentration rate φ_s who has larger absolute risk aversion $\alpha_s = 1/\varphi_s$. For these two managers, the thresholds (τ_j , j=l, s) for entering the export market are:

$$\tau_{\rm s} = \frac{1}{\varphi_{\rm s}} \left(\frac{\delta^2}{2} + \delta \rho \right) > \tau_{\rm l} = \frac{1}{\varphi_{\rm l}} \left(\frac{\delta^2}{2} + \delta \rho \right) \tag{5}$$

A manager in more concentrated firm requires lower profits to enter the foreign market than a manager in less concentrated firm. If the profits from exports, $\pi_f - S$ are greater than τ_s , both firms will be exporters, and if the profits are lower than τ_s , both firms will be non-exporters. If the profits are in between the two thresholds, only the firm with concentrated ownership will enter the market.

Now it is possible to empirically analyze the firm's export decision using a probabilistic framework. A firm will become an exporter if expected utility from foreign profits is greater than zero. The decision can be written as a discrete-choice equation about exports for firm i, exp_i:

$$\exp_{i} = \begin{cases} > 0 \quad if \quad (\pi_{f} - S)_{i} > \tau_{i} = f(\phi_{i}) \\ 0 \qquad \text{otherwise}, \end{cases}$$
(6)

⁴ Correlation coefficient between the two profits is 0.917 for our data, implying the two profits are subject to the same business cycles. Therefore, exports increase a firm's total risks.

The probability of firm i being an exporter, $p_i = Pr(exp_i > 0)$, can now be analyzed with a binary choice model. After logistic transformation, the logarithm of the odds ratio is a linear function of the concentration rate and other explanatory variables, and can be estimated by logit model as:

$$\ln[\mathbf{p}_{i}/(1-\mathbf{p}_{i})] = \beta \varphi_{i} + \gamma' z_{i}$$
(7)

where β and γ are a parameter for concentration rate and parameter vector for other control variable vector z, respectively.

Relatively more efficient firms can export to more countries than relatively less efficient firms if different export markets require separate fixed costs to enter. Under the circumstances, firm's export performance will be represented by export propensity – i.e. export revenues over total sales (=exports/sales) – after controlling firm size. Export propensity is defined on [0, 1] in which zero stands for non-exporters and one for firms exporting all their products, and Tobit model can be applied to deal with the censored dependent variable.

4 Data and Variables

In this section, we describe the data and variables used in our empirical analysis of the relationship between the ownership structure of firms and their export performance. The data set used in this paper is an unbalanced panel consisting of annual time-series for 463 Korean manufacturing firms during 1994-2005, with a total of 5,557 observations. The sample covers all manufacturing firms whose stocks are listed on the Korean Stock Exchange. The enlisted firms are required to report their financial status. All firms' data are taken from their financial reports.

Exports are observed in 1,640 observations, which is about 29.5% of total observations.

Given that a large portion of observations are domestic firms, a binary variable of exporters/non-exporters is first constructed to investigate the impact of ownership concentration on firm's export decision. We use the logit model, which is widely used in the literature on firm-specific effects on export activity. This model regress the binary variable on the set of explanatory variables that include concentration rate and other relevant variables. In the logit model, coefficient estimates represent the impact of explanatory variables on the probability of firm's being an exporter. In addition, we estimate a Tobit model to study firm's export propensity – i.e. ratio of exports to total sales. The propensity to export is defined on [0, 1], which suggests that a Tobit model designed for censored data will be useful.⁵

Our key variable of interest is the ownership concentration rate (CR) since the central objective of our empirical analysis is to investigate the effect of ownership structure on export performance. CR is defined as the ratio of the dominant shareholder's share to total shares, and reflects the extent to which the dominant shareholder controls the management. CR is a good proxy for ownership structure since dominant shareholders tend to exercise a great deal of influence on the management of Korean firms.

To accurately estimate the impact of ownership concentration on exports, we have to control for other firm-specific factors that influence exports. Our control variables include standard variables such as wage rate, capital intensity, R&D stock, firm size, productivity, and firm age. Among these variables, wage rate and capital intensity represent the traditional factor endowment theory. R&D stock reflects the technology gap theory of trade [see Posne (1961), Kreugman (1979)] or the product cycle theory [see Vernon (1966)] in which technological innovation plays a central role in shaping

⁵ Applying ordinary lease square (OLS) regression method will produce biased estimates.

international trade structure. Many empirical studies analyzed the impact of R&D on firm's export activity [see Kumar and Siddharthan (1994), Willomore (1992), Hirsch and Bijoui (1985) and Wakelin (1998)].

There are fixed costs associated with entering export markets. These include collecting information, establishing a distribution network, and adapting products to foreign tastes and regulations. Since these costs are sunk costs, uncertainty may cause persistence in export participation. Firms may continue to export even though it is temporarily unprofitable to do so, or hesitate to export due to the option value of waiting for more information [see Roberts and Tybout (1997)]. For this reason, a number of studies point out that exporters are large and productive enough to absorb the costs of waiting [see Richardson and Rindal (1995), Bernard and Jensen (1997), Bernard and Wagner (1997), Bleaney and Wakelin (1999) and Roberts and Tybout (1997)]. Firm size affects export performance through economies of scale in production and export marketing, higher capacity for taking risks, better access to financing, and sufficient managerial, R&D and marketing resources [see Sterlacchini (2001)].

Both productivity and age are additional firm-specific variables which may influence a firm's decision to export. The effect of productivity on exports is intuitively straightforward since global markets are typically much more competitive than the domestic market. Therefore, more productive and efficient firms are more likely to be internationally competitive and more likely to export. The impact of firm age on exports is ambiguous. On the one hand, older firms might have higher export propensities because they are more experienced in international trade. On the other hand, many newer firms are more successful with new technology, which can be an important tool for

exports [Ramstetter (1999)]. The positive impact of age might diminish beyond a certain threshold as firm's learning curve rises at decreasing rate. In light of this possibility, we include both age and age squared in our estimation.

We compute the wage rate by dividing total labor costs by the number of employees (L). Total labor costs consist of wages, bonuses, retirement compensation, and all other costs associated with employee remuneration. The capital stock (*K*) is the real amount of tangible fixed assets. Dividing the capital stock (K) by the number of employees (L) gives us the capital-labor ratio (K/L). Labor productivity (VA/L) is per capita value added (VA), and comprises net profits, labor costs, net interest payments, rents, taxes other than corporate tax, and depreciation costs. R&D stock is estimated by perpetual inventory methods based on firm's R&D investment. Following much of the literature, we apply a depreciation rate of 10%. Firm age is calculated from the founding year. All variables are converted into constant 2000 prices.

Table 1 presents sample means and standard deviations. We perform the t-test to test the null hypothesis that mean values are equal between exporters and non-exporters. The null was rejected at the 1% significance level for every variable except age. Most significantly, this implies that exporters have higher ownership concentration than non-exporters. In addition, relative to non-exporters, exporters pay higher wages and have greater capital intensity ratio, R&D stock, labor productivity, and sales.

[Table 1]

5 Main Empirical Findings

In this section, we report and discuss the main results from our empirical analysis, which consists of two parts -(1) logit estimation of the decision to export or not and (2)

tobit estimation of export propensity. Before estimating the logit and tobit models, we examine the correlation between explanatory variables. Table 2 reports the Pearson correlation coefficients. There exists a strong correlation between wage rate and labor productivity, R&D stock and both sales and employment, and sales and employment. We do not use these pairs of variables together in regressions to avoid multicollinearity.⁶

[Table 2]

5.1 Logit Estimation of Exporters versus Non-Exporters

Table 3 reports the results of our logit estimation of the export decision – i.e. whether or not to export – of our sample of Korean manufacturing firms. The regression uses a binary variable of exporter or non-exporters as the dependent variable. For our purposes, the key explanatory variables is the ownership concentration rate. Additional explanatory variables include variables widely used in the trade literature, such as wage rate, capital intensity and R&D stock. We experiment with various permutations of explanatory variables to estimate four different models.

[Table 3]

The coefficient estimates of ownership concentration rate, wage rate, capital intensity and R&D stock are all positive and significant in Model (i). Estimation results show that firm's probability of entering the foreign market increases with ownership concentration rate, wages rate, capital intensity and R&D stock. This implies that exporting firms pay higher wages and have greater capital intensity and R&D stock. Model (ii) substitutes wage rate with labor productivity as explanatory variable. These two variables are closely

⁶ Putting these correlated variables together changed the significance and sign of coefficient estimates, which is apparent symptom of multicollinearity.

correlated.⁷ The coefficient estimates of all the explanatory variables remain positive and significant. This is still the case when R&D stock is replaced with sales in Model (iii).⁸ Model (iv) added both firm age and firm age squared as additional explanatory variables to Model (i). The coefficient estimates of the basic explanatory variables remain the same. However, the coefficient of age is positively insignificant and its squared term is negatively significant.⁹ This suggests that the impact of business experience on entering export market diminishes as firms grow older, even though it might initially have a positive influence.

Most significantly, our estimation results show that higher ownership concentration rate increases the probability of firm's entering foreign markets. The results thus support our central hypothesis that firms with concentrated ownership venture into risky export markets to maximize expected profits whereas firms with dispersed ownership tend to stay home to avoid the risk of incurring the large sunk costs associated with exporting. Managers in firms with dispersed ownership prefer to avoid risk and achieve concrete business outcomes in a short period. This discourages them from entering risky foreign markets, which require large sunk costs that can only be recovered in the long run. Our empirical results confirm the existence of an agency problem – i.e. risk-averse managers of firms with diffuse ownership do not export even though exporting is profitable and thus beneficial for shareholders.

With respect to our control variables, our results show that firms are more likely to be exporters as wage rate, capital intensity, R&D stock, productivity and sales increase. Our

⁷ Coefficient estimates of these two variables become insignificant due to multicollinearity when they are both included.

⁸ Multicollinearity causes coefficient estimates of R&D to be insignificant when these two variables are both included.

⁹ Coefficient estimates of wage rate, labor productivity and R&D stock become insignificant due to multicollinearity when labor productivity and sales are added to Model (iv).

results confirm that within the Korean manufacturing sector, exporters are larger, more productive, more capital- and R&D-intensive, and pay higher wages than non-exporters. Our evidence is consistent with a large body of empirical literature which find similar differences between exporters and non-exporters [see Bernard and Jensen (1997), Aitken, Hanson and Harrison (1997), Aw and Hwang (1995), Clerides, Lach and Tybout (1998), and Roberts and Tybout (1997)]. Such evidence is intuitively plausible since more efficient and larger firms with adequate resources are better able the large sunk costs required to enter foreign markets.

5.2 Tobit Estimation of Export Propensity

The previous section treated exporting as a zero-one binary variable by dividing the sample firms into exporters and non-exporters. If there are many different export markets that require separate fixed costs to enter, risk-averse firms are likely to export to a smaller number of markets since entering more markets entails a larger total fixed cost. As discussed earlier, a lot of the fixed costs are sunk costs. We now treat a firm's exports as a continuous variable rather than a binary variable. More precisely, we measure a firm's export sale export performance as export propensity, or the ratio of export revenues to total sales.

Table 4 represents the coefficient estimates of the tobit estimation of export propensity for Korean manufacturing firms. Export propensity defined on [0, 1] is the dependent variable. Zero stands for non-exporters and one stands for firms exporting their entire output. Applying ordinary least square (OLS) estimation method to this censored data will cause coefficient estimates to be biased since this method can generate predicted values of the dependent variable which lie outside the feasible range. To deal with the problem, we use a tobit model censored at both right and left ends. As for the logit estimation, our key explanatory variable of interest is the ownership concentration rate. In addition, we include explanatory variables widely used in the trade literature such as wage rate, capital intensity, and R&D stock. In estimation, we use a semi-log model is utilized which transforms all explanatory variables into logarithms to control for heteroscedasticity arising from firm scale. However, we use the dependent variable in its original form to keep its censored characteristics.¹⁰ We estimate four models, which represent various permutations of the explanatory variables.

[Table 4]

The coefficient estimates of ownership concentration rate, capital intensity and R&D stock are all positively significant, but that of wage rate is negatively significant in Model (v). Estimation results show that firm's export propensity rises with the ownership concentration rate, capital intensity and R&D stock, but falls with the wage rate. Model (vi) substitutes wage rate with labor productivity as explanatory variable. These two variables are closely correlated.¹¹ The coefficient estimates of concentration rate, R&D stock and labor productivity are positive and significant, but that of capital intensity become insignificant. When both age and squared term of age are added as explanatory variables are positively significant, but that of age is positively insignificant and its square term negatively significant. When labor productivity and employment are added in Model (viii), the coefficient estimates of wage rate, capital intensity and employment are added in Model (viii), the coefficient estimates of wage rate, capital intensity and employment are added in Model (viii), the coefficient estimates of wage rate, capital intensity and R&D stock become insignificant due to multicollinearity.

¹⁰ However, age and its square term is used in their original form because the logs of these variables are perfectly correlated.

¹¹ Coefficient estimates of these two variables become both insignificant due to multicollinearity when both are included.

Most significantly, our estimation results show that an increase in the ownership concentration rate boosts a firm's export performance. The results suggest that firms with concentrated ownership are willing to bear risk the high level of risk required to enter a large number of foreign markets, in order to maximize expected profits. In contrast, our evidence implies that the managers of firms with dispersed ownership tend to avoid the risk of incurring large sunk costs required to enter a large number of foreign markets. They may prefer instead to concentrate on fast-growing export markets with which they are more familiar due to geographical proximity. This type of export strategy is less risky and involves lower sunk costs than exporting to many different countries. For example, China is a highly promising market for a large number of Korean firms, regardless of their ownership structure. On the other hand, our results indicate that firms with more concentrated ownership are more likely to bear the higher risk associated with exporting to slower growing and less familiar markets. Our confirm evidence supports the existence of agency problem in firm's decision-making about the number of export markets. Risk aversion deters the managers of firms with dispersed ownership from exporting to more markets even though doing so may raise profits and thus benefit shareholders.

With respect to our control variables, much of our evidence mirrors the results of our logit analysis. More specifically, our tobit results indicate that firms with higher capital intensity, R&D stock and productivity export to more markets. One departure from the logit results is that firms paying lower wages are likely to enter more export markets than firms paying higher wages. Our tobit results are based on comparing the wage rates of exporters with those of other exporters while our logit results are based on comparing the wage rates of exporters and non-exporters. Our tobit results suggest that exporters paying

lower wages export to more countries than exporters paying higher wages, whereas our logit results suggests that exporters pay higher wages than non-exporters.

6 Concluding Observations

The central objective of our study was to empirically examine the relationship between the ownership structure of firms and their export performance. More specifically, using data from the Korean manufacturing sector, we investigate the relationship between ownership concentration and export performance. Our study lies at the cross-section of (1) a key stylized fact of globalization – i.e. the high and growing importance of exports in corporate performance – and (2) a large and growing empirical literature which delves into the relationship between the ownership structure of firms and their overall performance. Somewhat surprisingly, there are almost no studies which explore the impact of ownership concentration on the export performance. The empirical studies that do touch upon the ownership-exports nexus look at the relative export performance of foreign owned firms versus domestic owned firms. Therefore, the primary contribution of our study is to help remedy this serious shortcoming of the literature.

Despite the lack of empirical studies, there are plausible intuitive grounds for believing that the ownership concentration of firms matters for their export performance. The point of departure for the underlying intuition is that exporting is a fundamentally high-risk activity. Foreign markets inherently involve greater risk than the more familiar domestic market due to asymmetric information. In addition, firms have to incur large sunk costs – e.g. adapting products to foreign consumer tastes, complying with foreign government regulation, building up new distribution networks, and marketing and advertising costs – in order to enter foreign markets. Retrieving those sunk costs take a long time. The

manager of a firm with dispersed ownership tries to avoid the large risk associated with exporting and concentrates on the domestic market to achieve concrete results in the short run. An agency problem arises because risk aversion deters such managers from exporting, which is profitable and thus beneficial for shareholders. On the other hand, the manager of a firm with concentrated ownership is more willing to bear the risks associated with exporting and thus maximize expected profits.

An empirically testable prediction of the above intuition is that firms with concentrated ownership are more likely to export that firms with diffuse ownership. We perform two types of empirical analysis to examine the relationship between ownership concentration and export performance. First, we first estimate logit models on the binary dependent variable of exporter versus non-exporter. Second, we estimate censored tobit models on the continuous dependent variable of export propensity or the ratio of exports to total sales. For both the logit and tobit models, to measure the impact of ownership concentration more accurately, we include a number of additional explanatory variables widely used in the trade literature. wage rate, capital intensity, R&D stock, firm size, productivity, and firm age. The most significant finding which emerges from both types of empirical analysis is that firms with concentrated ownership are likely to enjoy stronger export performance than firms with diffuse ownership. This result provides some support to our hypothesis that risk aversion may cause an agency problem which discourages diffuse-ownership firms from exporting.

The primary implication of our empirical results for policymakers is that the positive effect of concentrated ownership on exports is an important additional factor which must be factored into policies influencing the ownership concentration of firms and, more

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generally, corporate governance. In the case of Korea, export-oriented industrialization was the leading engine of growth which transformed the country into an economic powerhouse. Underlying this national success was the phenomenal success of Korean firms in selling manufactured products abroad. Our empirical evidence suggests that firms with more concentrated ownership were at the forefront of Korea's emergence as a globally significant exporter. This lends support to the conventional wisdom that originally family-owned firms with highly concentrated ownership made a big contribution to Korea's export success. While both theoretically and empirically the impact of a firm's ownership structure on its performance is ambiguous, our results imply that greater concentration may be beneficial for a key component of performance, namely exports. This is especially relevant for policymakers in countries which depend heavily on exports for growth.

While our study empirically investigates an important but previously underexplored relationship – that between ownership structure and export performance – it is by no means the definitive final word. In fact, our study marks a first step toward better understanding the ownership-export nexus which will, hopefully, encourage other researchers to delve into the issue. There are several promising directions for future research. Perhaps the most promising research area is to examine the relationship between ownership structure and export performance in other successful export-led East Asian economies. It would also be interesting to take a look at the ownership-exports relationship in more mature advanced economies such as the US which have different corporate governance environments. Finally, another potential extension of our research would be to look at the relationship between ownership structure and FDI.

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References

- Aitken, B., Hanson, G.H. and A.E. Harrison (1997), "Spillovers, Foreign Investment, and Exports Behavior," *Journal of International Economics* 43, 103-132.
- Aw, B. and A.R. Hwang (1995), "Productivity and the Export Market: A Firm-Level Analysis," *Journal of Development Economics* 47, 313-332.
- Berle, A. and G. Means (1932), *The Modern Corporation and Private Property*, MacMillan, NY.
- Bernard, A.B. and J.B. Jensen (1997), "Exporters, Skill-Upgrading, and the Wage Gap," *Journal of International Economics* 42, 3-31.
- Bernard A.B. and J. Wagner (1997), "Exporters and Success in German Manufacturing," *Weltwirtschaftliches Archiv* 133, 134-157.
- Bleaney, M. and K. Wakelin (1999), "Sectoral and Firm-Specific Determinants of Export Performance: Evidence from the United Kingdom," Research Paper 99/12, Center for Research on Globalization and Labour Markets, University of Nottingham.
- Clerides, S.K., Lach, S. and J.R. Tybout (1998), "Is Learning by Exporting Important? Micro-dynamic Evidence from Colombia, Mexico and Morocco," *Quarterly Journal* of Economics 113, 903-948.
- Cole, M., Elliott, R. and Virakul, S. (2010), "Firm Heterogeneity, Origin of Ownership and Export Participation," *World Economy* 33(2): 264-291.
- Demsetz, H. and K. Lehn (1985), "The Structure of Corporate Ownership: Causes and Consequences," *Journal of Political Economy* 93(6), 1155-1177.
- Filatotchev, I., Stephan, J. and Jindra, B. (2008), "Ownership Structure, Strategic Controls and Export Intensity of Foreign-Invested Firms in Transition Economies," *Journal of International Business Studies* 39(7): 1133-1148.
- Griliches, Z. and J. Hausman (1986), "Errors in Variables in Panel Data," *Journal of Econometrics* 31, 93-118.
- Hermalin, B. and M. Weibach (1991), "The Effects of Board Compensation and Direct Incentives on Firm Performance," *Financial Management* 20, 101-112.
- Himmelberg, C., Hubbard, R. and D. Palia (1999), "Understanding the Determinants of Managerial Ownership and the Link between Ownership and Performance," *Journal* of Financial Economics 53, 353-384.

- Hirsch, S. and I. Bijaoui (1985), "R&D Intensity and Export Performance: A Micro View," *Weltwirtschaftliches Archiv* 121, 138-251
- Joh, S.W. (2003), "Corporate Governance and Firm Profitability," *Journal of Financial Economics* 68, 287-322.
- Kumar, N. and N.S. Siddharthan (1994), "Technology, Firm Size and Export Behavior in Developing Countries: The Case of Indian Enterprise," *Journal of Development Studies* 32, 288-309.
- McConnel, J.J. and H. Servaes (1990), "Additional Evidence on Equity Ownership and Corporate Value," *Journal of Financial Economics* 27(2), 595-612.
- Morck, R., Shleifer, A. and R.W. Vishny (1988), "Management Ownership and Market Valuation: An Empirical Analysis," *Journal of Financial Economics* 20, 293-315.
- Ngoc, P. and Ramsetter, E. (2009), "Foreign Ownership and Exports in Vietnamese Manufacturing," *Singapore Economic Review* 54(4): 569-588.
- Rasiah, R. (2007), "Export Orientation and Technological Intensities in Auto Part Firms in East and Southeast Asia: Does Ownership Matter?" *Asian Economic Papers* 6(2): 55-76.
 - . (2005), "Foreign Ownership, Technological Intensity and Export Incidence: A Study of Auto Parts, Electronics and Garment Firms in Indonesia," *International Journal of Technology and Globalisation* 1(3-4): 361-380.

_____. (2003) "Foreign Ownership, Technology and Electronics Exports from Malaysia and Thailand," *Journal of Asian Economics* 14(5): 785-811.

- Richardson, J.D. and K. Rindal (1995), "Why Exports Really Matter!" The Institute for International Economics and the Manufacturing Institute, Washington D.C.
- Roberts, M.J. and J.R. Tybout (1997), "The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs," *American Economic Review* 87, 545-564.
- Rojec, M., Damijan, J. and Majcen, B. (2004), "Export Propensity of Estonian and Slovenian Manufacturing Firms: Does Foreign Ownership Matter?" *Eastern European Economics* 42(4): 33-54.
- Vernon, R. (1966), "International Investment and International Trade in the Product Cycle," *Quarterly Journal of Economics* 80, 190-207.
- Wakelin, K. (1998), "Innovation and Export Behavior at the Firm Level," *Research Policy* 26, 829-841.

Wignaraja, G. (2008), "Foreign Ownership, Technological Capabilities and Clothing Exports in Sri Lanka," *Journal of Asian Economics* 19(1): 29-39.

of the Korean Manufacturing Firms: Means (Standard Deviations)				
Variable (Abbreviation)	Definition	Exporters	Non-Exporters	
Exporters	Exporters if Exports>0	1640+	3916	
Export Propensity	Exports/Sales	0.410(0.291)		
Ownership Concentration Rate (OC)	Largest Shareholder's Share Rate	29.74(19.16)	25.76(19.51)	
Wage Rate (Wage)	Labor Costs/Employment	14.69(19.94)	11.83(17.78)	
Capital Intensity (K/L)	Fixed capital (K) /Employment (L)	1.875(2.410)	1.581(1.845)	
R&D Stock (R&D)	R&D Stock	264.76(2008.7)	77.67(933.0)	
Labor Productivity (Prod.)	Value Added (VA) /Employment (L)	17.42(30.44)	13.28(29.94)	
Firm Age (Age)	Years Elapsed from Foundation	28.65(11.91)	28.74(16.73)	
Sales	Total Sales	10927(54940)	2621(12434)	

Table 1Variables for Ownership Concentration and Exportsf the Korean Manufacturing Firms: Means (Standard Deviations)

Notes: + denote the number of exporting firms. All the other variables are in 10 million Korean won in 2000 constant price, except largest shareholder's share rate and firm age. To convert into approximate US dollars, divide by 1,000.

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Variable	OC	Wage	K/L	R&D	Prod.	Age	Sales
Wage	0.0615						
K/L	0.0930	0.2273					
R&D	-0.0617	0.1099	0.0223				
Prod.	0.0355	0.855	0.1803	0.1496			
Age	0.0817	-0.0427	0.1526	0.0135	-0.0328		
Sales	-0.0531	0.176	0.1113	0.7279	0.2372	0.0162	
L	-0.0771	0.0777	0.0313	0.6499	0.1087	0.0566	0.7775

Table 2Correlation between the Variables for Ownership Concentrationand Exports of the Korean Manufacturing Firms: Pierson Correlation Coefficient

Notes: OC=ownership concentration rate, Wage=wage rate, K/L=capital intensity, Prod.=labor productivity (=VA/L), Age=firm age, Sales=total sales.

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Variable	Model				
	(i)	(ii)	(iii)	(iv)	
OC	0.005 ^{***} (0.001)	0.005 ^{***} (0.001)	0.005 ^{***} (0.001)	0.006 ^{***} (0.001)	
Wage	0.005 ^{***} (0.001)		0.004 ^{***} (0.001)	0.004 ^{***} (0.001)	
K/L	0.055 ^{***} (0.014)	0.057 ^{***} (0.014)	0.034 ^{**} (0.014)	0.073 ^{***} (0.015)	
R&D	0.0001 ^{***} (0.00004)	0.0001 ^{***} (0.0000)		0.0001 ^{***} (0.0000)	
Prod.		0.003 ^{***} (0.001)			
Age				0.005 (0.008)	
Age ²				-0.0003*** (0.0001)	
Sales			0.00001 ^{***} (0.00000)		
Constant	-1.181 ^{***} (0.064)	-1.167 ^{***} (0.063)	-1.131 ^{***} (0.060)	-1.007 ^{***} (0.139)	
LLR	-2937.85	-2938.46	-3212.95	-2906.21	
$\chi^2(4)$	65.47***	64.25***	101.16***	128.75***	
No. of Obs.	4837	4837	5261	4837	

 Table 3

 Logit Regression for Ownership Concentration and Exports of the Korean Manufacturing Firms: Dependent Variable (Exporters/Non-Exporters)

Notes: Standard errors are in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. OC=ownership concentration rate, Wage=wage rate, K/L=capital intensity, Prod.=labor productivity (=VA/L), Age=firm age, Sales=total sales.

Variable	Model			
	(v)	(vi)	(vii)	(viii)
log(OC)	0.083 ^{***} (0.018)	0.086 ^{***} (0.018)	0.076 ^{***} (0.018)	0.079 ^{***} (0.018)
log(Wage)	-0.078 ^{***} (0.011)		-0.096 ^{***} (0.011)	-0.147 (0.097)
log(K/L)	0.021 [*] (0.012)	0.011 (0.013)	0.048 ^{***} (0.012)	0.005 (0.013)
log(R&D)	0.009 ^{**} (0.003)	0.021 ^{****} (0.003)	0.006 [*] (0.003)	-0.002 (0.003)
<i>log</i> (Prod)		0.071 ^{***} (0.010)		0.097 ^{***} (0.012)
Age			-0.001 (0.003)	0.0008 (0.003)
Age ²			-0.0001 ^{***} (0.0000)	-0.0001 ^{***} (0.0000)
log(L)				-0.022 (0.097)
Constant	-1.455 ^{***} (0.174)	-1.964 ^{***} (0.200)	-1.620 ^{***} (0.180)	-2.574 ^{***} (0.217)
LLR	-2471.92	-2473.02	-2418.36	-2377.50
χ ² (4)	117.90***	115.72***	225.02***	306.75***
No. of total Obs. (left, right censored)	3947 (2731, 32)			

 Table 4

 Tobit Regression for Ownership Concentration and Exports of the Korean Manufacturing Firms: Dependent Variable (Exports/Sales)

Notes: Standard errors are in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively. OC=ownership concentration rate, Wage=wage rate, K/L=capital intensity, Prod.=labor productivity (=VA/L), Age=firm age, Sales=total sales. For others, see notes to table 3.