

A comparative study on export promotion programs: Manufacturing versus services

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Abstract

This paper provides a comparative study on the effectiveness of export promotion programs between manufacturing and service firms, based on a survey analysis for Korean companies. Specifically, we explore the relationships among the characteristics of individual firms, the key barriers to trade for these firms and the effectiveness of EPPs. First of all, our estimation results show that the net impact of export promotion programs on individual firms' export performance, after controlling for firm-level heterogeneity, tends to be more significant for manufacturing firms than for service firms. Second, regardless of an individual firm's status or characteristics, bottlenecks in overseas marketing, such as the lack of marketing experts and the difficulty in securing foreign distribution networks, are the most binding constraints to exporting activities. Third, while firms have different needs for public export support depending on their own characteristics, this mechanism is more complex for service firms relative to manufacturers.

Keywords: Export promotion programs, Trade in services, Export status, Firm heterogeneity

JEL Classification: F14, H43, M30

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1 Introduction

Export promotion programs (EPPs hereafter) are actively implemented by a majority of countries in the world, under the widespread recognition that exports are arguably a key engine of long-term sustainable economic growth. EPPs comprise all the measures and programs helping incumbent and potential exporters to penetrate into foreign markets through exporting activities, by providing various supports for financial, informational, marketing, and training areas. These programs aim to promote learning-by-exporting and dynamic externality through the acquisition of external technical knowledge, or to correct for market failure stemming from information asymmetry, coordination failure, and other market imperfections. Many countries also adopt EPPs to nurture domestic infant industries and to foster strategic exporting sectors.

In reality, however, attaining these policy goals through EPPs is rather a daunting task. As Melitz (2003) suggests, export participation incurs extra-costs to serve a foreign market and only the more productive firms could cover these costs while still being profitable. Consequently, only a small set of firms succeeds in exporting on a regular basis. Successful exporters are generally larger in size, paying higher wages, investing more in R&D and, most importantly, more productive than non-exporters. Typically, small and medium-sized enterprises (SMEs hereafter) suffer from various internal constraints as well as external challenges in the export market. Therefore, well-designed policy measures for these firms and their effective implementation are strongly required in order to fulfill the intended policy objectives of EPPs.

The existing empirical literature generally suggests that the usefulness of specific EPPs could vary across firms, depending upon the individual firms' characteristics and the key obstacles they are facing in the export market. For instance, Moini (1998) argues that the need for EPPs would diminish if companies go beyond the initial stage of export development. In addition, Francis and Collins-Dodd (2004) show that at the early stage of export development firms seem to have a greater need for export training services, support for handling documentation, and information on foreign markets and potential customers. On the other hand, as exporters enter into more advanced stages, they become more interested in services

related to communications, logistics and sales assistance. These all imply that the government should identify the obstacles that individual firms face and develop support programs tailored to each firm's characteristics.

One of the important issues that the current literature has paid less attention to is whether there exists any structural difference in the needs for EPPs between firms exporting goods and those engaging in trade in services. Nowadays, trade in services accounts for over 20 percent of global trade, and its importance has gradually increased, especially during recent years under the global recession. It is well known that trade in services involves more active and frequent interactions between service providers and their customers, and their modes of cross-border transaction are more diverse than trade in goods. Furthermore, most of the service firms are relatively smaller in size, less capital-intensive, and usually maintain a higher debt to equity ratio than their manufacturing counterparts. Taking such apparent differences in trade patterns and characteristics into consideration, it is highly plausible that firms engaging in trade in services may have different needs for EPPs compared to manufacturers. Surprisingly, however, there is a scarcity of research focusing on examining the effectiveness of EPPs for firms engaging in cross-border service transactions.

In this context, this paper provides a comparative study on the effectiveness of EPPs between manufacturing and service firms, based on a survey analysis for Korean companies that participate in EPPs. The survey was conducted during March 7 to 20 in 2013, and a total of 648 respondents are used in the analysis, consisting of 479 manufacturers and 169 service companies. Using the survey results, this paper empirically examines the relationship among the characteristics of individual firms, the key barriers to trade for these firms and the effectiveness of EPPs.

The structure of this paper is as follows: In Section II, we discuss the existing related literature. The basic empirical strategies, data description and analytic results are reported in Section III. Finally, Section IV summarizes the analytic results and concludes the paper.

2 Literature review

Given the prevalence of EPPs across countries, an extensive body of empirical studies has investigated the adequacy and effectiveness of these programs. The existing literature on EPPs could be classified into three broad categories depending on their research foci. The first group focuses on testing the awareness, usage and usefulness of EPPs. As Kumcu et al. (1995) argues, the adequacy of export assistance programs and firms' awareness of these programs are two important determinants of successful EPPs. And improved awareness could contribute to more intense utilization of EPPs and to higher economic performance. In that sense, public efforts to raise awareness should be a first step for export promotion, if many firms are unfamiliar with the existing availability and usage of EPPs. In fact, a significant portion of empirical studies reports a low awareness and usage of the government assistance for exports (Albaum, 1983; Kedia and Chhokar, 1986; and Moini, 1998). Kumcu et al. (1995) show that the extent of export interest, past export exploration and firm size are strongly associated with managers' awareness and their perception on the adequacy of the government support.

The second stream of research on export promotion programs investigates the linkage between individual firms' characteristics and their differential needs for the governmental support on exporting activities. Particular attention has been paid to the key constraints that individual firms may confront at different export development stages and the adequacy of EPPs to tackle them in an effective way. As aforementioned, a number of the empirical papers, including Kotabe and Czinkota (1992), Moini (1998) and Francis and Collin-Dodd (2004), show that the effectiveness of export support measures may be different depending on individual firms' stage of export development. Using a sample of U.S. exporting manufacturers in the Midwestern states, Kotabe and Czinkota (1992) report that the availability of market information and export financing is crucial particularly for firms at the early stages of export development.

According to Leonidou (2004), export constraints to which SMEs are exposed during the course of advancing into foreign markets are divided into two types; "internal barriers" related to resource availability,

productive capabilities, and corporate strategies within a company and “external barriers” derived from macro and institutional conditions in the exporting country or foreign export market. Leonidou (2004) identifies a total of 39 detailed constraints – either internal or external – and pursues a comprehensive analysis of the nature and problems of these barriers. While the effect of export barriers depend on the idiosyncratic managerial and organizational features of the firm, Leonidou (2004) suggests that informational barriers on exporting markets, potential customer information as well as profitable business opportunities are among the most significant obstacles hindering firms’ exporting activities. In addition, price competitiveness, foreign customer habits and politico-economic hurdles are reported as other influential constraints on export behavior. This indicates that the key constraints for SMEs to overcome in export markets lie mostly in internal barriers, notably information constraints on identifying overseas export markets, securing export opportunities and marketing issues related to setting competitive prices.

Kneller and Pisu (2011) provide the empirical evidence that costs bearing upon the initial contact and marketing activities are substantial barriers to export for the U.K. companies. They also show that the probability that firms face these barriers again tends to diminish with accumulated export experience. And using a German firm-level dataset, Arndt et al. (2011) show that firm size and productivity are the main determinants of foreign activities of a firm, which is consistent with the Melitz (2003)’s theoretical model. According to their results, financial constraints may not be a major barrier for average German firms, while labor market frictions critically affect firms’ decision to export.

Recently, OECD (2015) implemented a survey analysis on 521 firms around the world to explore the private sector views on trade barriers. The analytic results indicate that ensuring access to information about export opportunities is the top priority for improvement both for large companies as well as SMEs. And it turns out that access to trade finance is a more crucial area to improve for SMEs than for large enterprises.

Finally, the third strand of research on export promotion programs concentrates on exploring the impacts of EPPs on the firm’s export performance. While many studies report a positive effect of EPPs on export outcome, some other papers provide inclusive evidence on the EPPs-export performance nexus. For instance, by applying the propensity

score matching method to the Danish firm-level data, Munch and Schaur (2018) recently demonstrate that export promotion programs contribute to increasing firms' sales, value added, employment, and value added per worker. Specifically, EPPs increase the probability of firms being exporters in the year they participate in the programs by 3.9 percentage points. Brooks and Van Biesebroeck (2017) find similar empirical results for the Belgian case.

On the other hand, an empirical analysis by Cadot et al. (2015) indicates that the effect of EPPs lasts only for a short period of time and that continued governmental support seems to be inevitable to maintain increased exports. In this analysis, the samples of small businesses and large enterprises do not have statistically significant effects, while the effects of EPPs are short-lived for medium-sized enterprises. Lages and Montgomery (2005) also suggest that the overall effects of export assistance on export performance are non-significant for Portuguese export ventures.

Besides, the current literature also provides mixed evidence on the specific channel through which EPPs improve export performance. For instance, Van Biesebroeck et al. (2015) show that export promotion services in Canada contribute to export performance by increasing the intensive margin – higher exports to the existing product-destination markets – rather than the extensive margin. On the contrary, Munch and Schaur (2018), as well as Volpe Martincus and Carballo (2008, 2010) provide the analytic results suggesting that EPPs have a greater impact on new firms entering the export market or expanding into new markets, rather than established exporters expanding the existing product-destination markets.

3 Empirics

3.1 Data and variable descriptions

Our study is based upon a survey for Korean companies that have experience of at least one of the export assistance programs provided by government agencies. With the government's help, we identified a list of companies that have benefited from government-funded projects. Before

launching a full-fledged survey, we first sent an email to an export representative or other person in charge of exports of each company to see if he/she was willing to participate in the survey. The actual survey was conducted during March 7 to 20 in 2013, and a total of 648 respondents are used in the analysis, consisting of 479 manufacturers and 169 service companies.¹ In the survey, a wide variety of questionnaires was included, comprising the company's history, the current status of activities, the perceived barriers to exports, managers' awareness and usage of export promotion programs, the level of satisfaction with government support programs, and the export performance of EPPs, etc.

Based upon these survey results, we construct a number of key variables used in our estimation. The list and brief descriptions of these variables are presented in Appendix I. Firm's age is calculated as the number of years after its establishment. The reference year is 2013, the year when our survey was conducted. Firm size is constructed by averaging the total number of employees for the period of 2009-12 and transforming it into a logged value. For the case that respondents did not provide full information on employees during the sample period, we use the employment size for the year either 2011 or 2012. In order to control for firm-level technological capacity, we utilize a dummy variable showing whether a firm possesses at least one intellectual property right (IPR hereafter) or not.

In order to identify a firm's export status, we consider four export-related variables: export experience, export stage, exporting channel and export destination. Export experience refers to the number of years passed since the firm engaged in exports for the first time. And to construct the variable of export stage, we classify firms into five groups; the first group consists of non-exporters seeking potential export opportunities, the second and third groups represent firms currently exporting only to a single destination in a sporadic way and on a regular basis, respectively. The fourth group is for exporters with more than one export destination but exporting on rather a sporadic basis. Regular exporters with multiple destinations belong to the final group.

On the other hand, we segmented firms into two categories to

¹ We had additional 56 respondents from other industries such as agriculture and power generation, construction and energy, which were excluded from the sample.

differentiate them in terms of export channels; the first category is for those exporting directly to foreign buyers without an overseas foothold or simply using domestic trade agents, and the second for the others exporting through a foreign trade representative or through an overseas branch, associated company, or a foreign subsidiary. And then we construct a dummy variable for the second group. Export destination is also a dummy variable indicating whether a firm's major export interest lies in developing countries or not.

In addition, we also include two additional variables to control for firms' status of internationalization; export personnel and overseas personnel. The variable of export personnel refers to the average proportion of workforce in export departments compared to total number of employees for the period of 2009-12. Similarly, the variable named as overseas personnel is defined as the average proportion of employees in overseas branches to total number of employees.

Finally, we add the extent of policy utilization as a control variable in estimation to estimate the net impact of the actual usage of EPPs on individual firms' performance. Given that our sample consists of the firms that have prior and/or current experience of participating in at least one of the public export promotion programs, this variable is constructed by adding up the total number of EPPs to which each firm has been exposed. These programs contain various public supports for financial, informational, marketing, and training areas. Here we focus on 15 individual export assistance programs for all firms - either manufacturers or service firms -, offered by the Ministry of Trade, Industry and Energy, the Small and Medium Business Administration, and Korea Custom Service. In addition, there are 21 extra small-scale programs specialized in trade in services, managed by the Ministry of Health and Welfare, the Ministry of Environment, the Ministry of Culture, Sports and Tourism, the Ministry of Land, Infrastructure and Transport, and the Ministry of Trade, Industry and Energy.² Hence the total number of EPPs that service firms can potentially use amounts to 36.

Table 1 presents the descriptive statistics of these variables both for

² For instance, the Ministry of Culture, Sports and Tourism offers various export assistance programs specialized in mobile games, performing arts, cultural contents, broadcasting, musicals, movies, etc. And the Ministry of Trade, Industry and Energy provides independent EPPs for IT services and computer software services.

manufacturing and services samples. Manufacturing companies are on average older, larger in size, and have more experience in exporting activities than service firms in the sample. Not surprisingly, manufacturers tend to export into more destinations on a regular basis, compared to service firms. On the other hand, it is interesting to see that service firms export their services more frequently through a foreign trade representative or through an overseas branch, associated company, or a foreign subsidiary, than manufacturing firms. In addition, they have a higher proportion of workforce in export departments relative to total employment size. These may reflect the fact that trade in services involves more active and frequent interactions between service providers and their customers than trade in goods.

At the bottom of Table 1, we represent the composition of the sample by export status. For this, we employ an extra data source from Korea Custom Office. This dataset comprises a complete list of Korean exporters for the period of 2009-13. By combining it with our survey results, we can classify our sample into 4 different groups: “non-exporters” that have no record of exports for the entire period; “ex-exporters” that have a record of exports for the period of 2009-12 but do not export in the year 2013; “sporadic exporters” that have no record of exports of at least one year for the sample period but export in the year 2013; and “regular exporters” that have a record of exports for the entire period.

As shown in the table, over 60 percent of manufacturing firms in the sample are regular exporters, while non-exporters account for 8.1 percent of the manufacturing sample. On the other hand, service firms are rather evenly distributed, with 36.1 percent of regular exporters and 32.0 percent of non-exporters. Such compositional difference is consistent with the common perception that manufacturing firms would engage in exports on a more regular basis than service counterparts.

Table 1. Descriptive statistics: Manufacturing versus services

Variable Name	Brief Description	Manufacturing Sample	Services Sample
age_i	Firm's Age	17.57 (11.83)	14.18 (10.98)
$size_i$	Firm's Size	84.07 (216.20)	53.63 (154.36)
IPR_i	IPR dummy	0.695 (0.461)	0.479 (0.501)
$EX_{age,i}$	Export experience	10.30 (8.39)	8.73 (7.91)
$EX_{stage,i}$	Export stage	3.38 (1.00)	3.04 (1.16)
$EX_{channel,i}$	Export channel	0.18 (0.39)	0.25 (0.44)
$EX_{destine,i}$	Export destination	0.62 (0.48)	0.75 (0.43)
$EX_{worker,i}$	Export personnel	0.077 (0.143)	0.193 (0.307)
$FB_{worker,i}$	Overseas personnel	0.039 (0.097)	0.037 (0.109)
EPP_i	Policy utilization	1.38 (1.50)	1.56 (1.76)
No. of Observations		479	169
- Non-exporters		39 (8.14%)	31.95%
- Ex-exporters		61 (12.73%)	18 10.65%)
- Sporadic exporters		88 (18.37%)	36 21.30%)
- Regular exporters		291 (60.75%)	61 (36.09%)

Note: For each variable, the estimated standard deviations are represented in parentheses.

3.2 Methodology

Our empirical study consists of two parts. First, we examine the net impact of EPP usage on firm-level economic performance, after controlling for various individual firms' characteristics. Specifically, we employ the following estimation specification:

$$Y_i = \alpha_0 + \alpha_1 age_i + \alpha_2 size_i + \alpha_3 IPR_i + \alpha_4 EX_{age,i} + \alpha_5 EX_{stage,i} + \alpha_6 EX_{channel,i} + \alpha_7 EX_{destine,i} + \alpha_8 EX_{worker,i} + \alpha_9 FB_{worker,i} + \alpha_{10} EPP_i + \Theta \Pi_i + \varepsilon_i \quad (1)$$

where Y_i is an individual firm's performance measure. In our survey, firms were asked to answer whether experience of export promotion programs contributes to improving their performance outcomes – both economic and strategic – in various areas. We here adopt a total of 5 different performance measures: new market expansion, exports, profitability, brand reputation, and global mindset enhancement. Each measure is a dummy variable that has the value one if a firm perceives that EPPs help to improve its

performance.³ We also include a vector of industry dummies, Π_i , as additional control variables in the estimation. We classify manufacturing and services into 15 and 19 sub-sectors, respectively. Finally we employ a probit model in regression.

In addition, we also run separate regressions by including a firm's export status dummies as non-exporters, ex-exporter, sporadic exporters or regular exporters, as illustrated above. In this case, our estimation equation is as follows:

$$Y_i = \beta_0 + \beta_1 age_i + \beta_2 size_i + \beta_3 IPR_i + \beta_4 EX_{age,i} + \beta_5 EX_{channel,i} + \beta_6 EX_{destine,i} + \beta_7 EX_{worker,i} + \beta_8 FB_{worker,i} + \beta_9 EPP_i + \Psi\Gamma_i + \Theta\Pi_i + \epsilon_i \quad (2)$$

where Γ_i is a vector of individual firm's export status. We exclude $EX_{stage,i}$ to avoid possible multicollinearity problems.

In the second part of our empirical study, we discuss the key barriers that firms face in export markets and explore the relationship between these barriers to trade and a firm's characteristics. While the major constraints for exports would vary depending on individual firms' different status and characteristics, it is often the case that governments intend to design and implement differentiated support programs that match them. Since the aforementioned estimations produce only the "net" effect of EPPs on corporate performance after controlling for a firm's characteristics, it would be desirable to pursue an additional investigation to explore the linkage between individual firms' characteristics and their different needs for governmental support for exporting activities.

For this purpose, we discuss the key barriers to exports that firms perceive, which is reported in the survey, and compare the results between manufacturing and service firms. And then we empirically examine the

³ Taking into account that our economic performance measures, such as exports and profitability, are based upon subjective judgement by respondents in the survey, we admit that it could lead to potential biases in estimation. On the other hand, however, since reliable quantitative data on these measures at the firm-level are scarce in reality, a lion's share of the related existing research predominantly takes a similar approach to our study. Furthermore, our research focus is to compare the performance of EPPs between manufacturing and services. Therefore, unless any systematic difference in estimation bias exists between these two groups, such problem would not much matter for our study. In any case, we try to deal with some of potential biases by controlling for firm characteristics.

relationship between major export barriers and individual firm's characteristics, by applying ordered logistic regression estimation to the survey data.

3.3 Empirical results

3.3.1 Effectiveness of exports promotion programs

Table 2 contains our estimation results for manufacturing firms based on estimation equation (1).⁴ As shown in the table, the net impacts of export promotion programs on performance for manufacturers, represented by the estimated coefficients for policy utilization (EPP_i), tend to be all positive with a high level of statistical significance, even after controlling for firm heterogeneity. The estimation results indicate that EPPs improve not only economic outcomes in terms of market expansion, export revenues and profitability, but also contribute to enhance strategic variables such as brand reputation and CEO's global mindset.

Among explanatory variables, technological capability, proxied by a dummy for firm's possession of intellectual property rights (IPR_i), is also an important determinant for better export performance. In addition, the more mature a company's export phase ($EX_{stage,i}$), the greater its performance appears, except for enhancing CEO's global mindset. A firm with a higher share of export representatives ($EX_{worker,i}$) tends to have better outcomes for market expansion, export revenues and profitability. And other things being equal, younger firms perform better for export and profit increase by participating in EPPs.

On the other hand, the estimation results for service firms based on Equation (1) is reported in Table 2. Compared to the manufacturing sample, the effectiveness of EPPs is somewhat lower in the case of service firms. The net impact of EPPs on export revenues is shown to be positively and statistically significant. Their impacts on strategic performance in terms of brand reputation and CEO's global mindset are also confirmed, although with a relatively lower level of significance. And, unlike

⁴ Unfortunately, there is much missing information on firm size in our sample. Consequently, we could implement regression estimations with a sample of around 340 manufacturers and 105 service firms. We also pursue the regression estimations with the whole sample by excluding the size variable in estimation, and confirm that qualitative results are largely preserved, even without it.

manufacturing, the estimation results suggest that engaging in EPPs do not contribute to service firms expanding new markets nor enhancing their profitability.

Table 2. Empirical result I: Manufacturing sample

	New Market	Exports Revenues	Profitability	Brand Reputation	Global Mindset
Age	-0.0126 (0.0089)	-0.0143 (0.0084)*	-0.0235 (0.0088)***	-0.0087 (0.0088)	-0.01132 (0.0085)
Size	-0.0182 (0.0811)	-0.0553 (0.0802)	-0.0581 (0.0755)	-0.1162 (0.0815)	0.0517 (0.0766)
IPR	0.5722 (0.1926)***	0.6448 (0.2069)***	0.5952 (0.1920)***	0.5719 (0.1866)***	0.4751 (0.1810)***
Export experience	-0.0002 (0.0120)	-0.01056 (0.0118)	0.0136 (0.0111)	0.0037 (0.0118)	0.0031 (0.0110)
Export stage	0.2331 (0.0549)***	0.3712 (0.0602)***	0.2245 (0.0547)***	0.1572 (0.0565)***	0.0824 (0.0528)
Exporting channel	-0.0989 (0.2043)	0.1271 (0.2131)	0.2053 (0.2011)	0.0432 (0.2031)	-0.1658 (0.1982)
Export destination	-0.0202 (0.1545)	0.0349 (0.1579)	-0.0655 (0.1567)	-0.1558 (0.1548)	-0.0577 (0.1499)
Export personnel	1.3395 (0.6692)**	1.607 (0.6028)***	1.9943 (0.5761)***	0.4803 (0.5722)	0.0594 (0.5552)
Overseas personnel	-0.6650 (.8106)	-1.4000 (0.7931)*	-1.6054 (0.7556)***	-0.8228 (0.7866)	0.07413 (0.7449)
Policy utilization	0.2768 (0.0565)***	0.1923 (0.0590)***	0.1193 (0.0510)**	0.2798 (0.0667)***	0.1734 (0.0589)***
No. of observations	347	337	345	345	345
Log pseudo-likelihood	-192.91	-185.05	-202.90	-196.91	-212.82
Pseudo R2	0.1906	0.2063	0.1466	0.1473	0.0894

Note: Industry dummies are included in estimation, but not reported. The standard errors are shown in parentheses, and *, **, and *** indicate the significance level of 10%, 5%, and 1%, respectively.

Table 3. Empirical result II: Services sample

	New Market	Exports Revenues	Profitability	Brand Reputation	Global Mindset
Age	0.0137 (0.0229)	0.0204 (0.0240)	0.0122 (0.0237)	-0.0178 (0.0201)	-0.0227 (0.0239)
Size	-0.0154 (0.1230)	-0.1285 (0.1335)	-0.0959 (0.1297)	0.1322 (0.1209)	0.2163 (0.1277)*
IPR	0.7421 (0.3269)**	0.5806 (0.3404)*	0.8129 (0.3605)**	0.8177 (0.3252)**	0.8209 (0.3540)**
Export experience	-0.0162 (0.0283)	0.0120 (0.0265)	0.0042 (0.0279)	-0.0110 (0.0267)	-0.0404 (0.0310)
Export stage	0.1906 (0.1054)*	0.1559 (0.1062)	0.0371 (0.1060)	0.0761 (0.1020)	0.1856 (0.1063)*
Exporting channel	0.2703 (0.3580)	0.3090 (0.3435)	0.6281 (0.3541)*	0.3584 (0.3567)	0.2424 (0.3513)
Export destination	-0.2963 (0.3449)	0.6423 (0.3663)*	-0.5552 (0.3755)	0.2286 (0.3526)	-0.1710 (0.3723)
Export personnel	0.2075 (0.5382)	0.2907 (0.5700)	1.0209 (0.5614)*	-0.0165 (0.5549)	0.1642 (0.5393)
Overseas personnel	0.4222 (1.227)	-1.8934 (1.0935)*	0.2138 (1.0100)	-0.3129 (1.0614)	2.3694 (1.1483)*
Policy utilization	0.0610 (0.0836)	0.2432 (0.0930)***	0.1167 (0.0819)	0.2453 (0.0960)**	0.1682 (0.0880)*
No. of observations	101	105	107	105	107
Log pseudo-likelihood	-61.25	-58.45	-60.00	-57.69	-56.56
Pseudo R ²	0.1221	0.1905	0.1822	0.2031	0.2335

Note: Industry dummies are included in estimation, but not reported. The standard errors are shown in parentheses, and *, **, and *** indicate the significance level of 10%, 5%, and 1%, respectively.

At the same time, our estimation confirms that the possession of intellectual property rights is a decisive factor for better performance of service firms in exporting activities, similar to the manufacturing case. Meantime, export stage and export personnel are relatively weaker determinants for export performance compared to the manufacturing sample.

By using the secondary information from Korea's Customs Office, we construct four categories of export status of each firm and re-run the regressions by replacing export stage with a dummy variable of export status: The estimation results based in Equation (2) are reported in Table

A2 and Table A3 of the Appendix. The overall positive net effects of policy utilization on firm's performance are preserved both for the manufacturing and service samples. On the other hand, the estimated coefficients of dummies for sporadic and regular exporters are mostly positive and statistically significant for the manufacturing sample, while this is not the case for service firms. In case of manufacturing, these results imply that, other things being equal, current exporters - either sporadic or regular - produce better outcomes by using EPPs, relative to non-exporters. This is not confined to economic performance but also applied to strategic outcomes such as enhanced brand reputation and/or CEO's global mindset.

3.3.2 Key constraints to export

As aforementioned, taking potentially different needs for export support across firms into consideration, governments usually aim to design and implement differentiated support programs that match firms' specific needs. As reported in Table 4, the binding constraints hindering exporting activities are the overall lack of overseas marketing experts and difficulties that firms confront in securing overseas distribution networks.

The survey results suggest that they are the most significant obstacles to exporting regardless of manufacturers or service firms. In the table we also compare non-exporters and regular exporters in these sectors, confirming that overseas marketing is the most challenging issue for both groups. Other than that, the shortage of export finance is one of the key binding constraints to exports for non-exporters in manufacturing, while manufacturing exporters are more concerned about the lack of information on overseas demand and potential buyers. On the other hand, non-exporters in the service sector seem to suffer from the absence of or a low level of brand reputation, and service exporters have serious concerns on regulatory burdens in foreign markets.

Table 4. Perceived barriers to export: Manufacturing versus services

	Manufacturing Sample			Service Sample		
	Total	Non-exporters	Regular exporters	Total	Non-exporters	Regular exporters
Lack of information on overseas demand/ buyers	3 (51.4%)	5 (59.0%)	3 (49.5%)	5 (40.8%)	5 (44.4%)	6 (34.4%)
Regulatory burden in foreign market	5 (48.4%)	7 (46.2%)	4 (47.8%)	7 (36.7%)	9 (25.9%)	2 (42.6%)
Shortage of export finance	6 (47.4%)	3 (69.2%)	6 (40.5%)	3 (47.9%)	4 (50.0%)	4 (39.3%)
Lack of overseas marketing experts	2 (56.2%)	1 (87.2%)	2 (50.2%)	1 (55.0%)	1 (68.5%)	2 (42.6%)
Low brand reputation	4 (49.5%)	4 (64.1%)	5 (43.6%)	4 (45.0%)	3 (55.6%)	6 (34.4%)
Difficulties in securing overseas distribution networks	1 (57.2%)	2 (74.4%)	1 (52.2%)	2 (53.8%)	2 (59.3%)	1 (47.5%)
Insufficient technological capacities	10 (13.6%)	10 (17.9%)	10 (13.7%)	10 (10.1%)	10 (7.4%)	10 (6.6%)
Insufficient government support for exporting activities	8 (34.0%)	9 (41.0%)	8 (33.0%)	9 (34.9%)	8 (31.5%)	5 (37.7%)
Difficulties in Information Acquisition on EPPs	7 (38.6%)	6 (56.4%)	7 (36.1%)	6 (39.6%)	5 (44.4%)	8 (32.8%)
Deficiency in proper foreign exchange management	9 (30.3%)	8 (43.6%)	9 (28.2%)	8 (35.5%)	7 (37.0%)	9 (29.5%)

Note: The percentage in parenthesis is a proportion of companies in the survey which responded that it is actually an obstacle.

Finally, in order to figure out how firms differently perceive export constraints, we pursue an additional estimation analysis. Our dependent variables are the potential constraints to exports listed in Table 4. We run a regression for each of these constraints as the dependent variable and our controls are the set of explanatory variables used in the previous estimation regressions, except for policy utilization. Since dependent variables come from the survey questionnaires, with a 5-level scale measure – from “most significant” to “not significant,” we adopt the ordered logistic regression model in the estimation. The results are shown in Table 5. In the second column, we report the estimation results for the whole sample.⁵ For instance, the lower the stage of exports, the smaller the size of

⁵ We report here only the estimated signs and their statistical significance in the table. We can provide the full results based upon request.

the enterprises, the lower the share of export representatives relative to total employment, and the higher the share of exports into advanced countries, the more significant challenge appears to be the lack of overseas marketing experts. A similar situation can be observed for the case of difficulties in securing overseas distribution networks. On the other hand, firms perceive more serious concerns when firms are younger and smaller, and at the lower stage of export development.

For the manufacturing sample, export stage, firm's size and export personnel are decisive factors for the degrees of concerns on export

Table 5. Empirical result III: Binding constraints to exports

	All Sample	Manufacturing Sample	Service Sample
Lack of information on overseas demand/ buyers	Export personnel(-)* Overseas personnel(-)**		Overseas personnel(-)*
Regulatory burden in foreign market			Overseas personnel(-)*
Shortage of financial resources for export operation	Export stage(-)*** Age(-)* Size(-)***	Size(-)*** Export destination(-)*	IPR(+)**
Lack of overseas marketing experts	Export stage(-)*** Size(-)*** Export channel (+)* Export personnel(-)***	Export stage(-)** Size(-)*** Channel(+)** Export personnel(-)***	Export personnel(-)***
Weak brand reputation	Export stage(-)*** Size(-)** Export personnel(-)*** Overseas personnel(-)*	Export stage(-)*** Size(-)* Export personnel(-)***	IPR(+)** Export personnel(-)**
Difficulties in securing overseas distribution networks	Export stage(-)*** Size(-)*** Export personnel(-)***	Export stage(-)*** Size(-)*** Export personnel(-)**	Size(-)** Export personnel(-)** Overseas personnel(+)*
Insufficient technological capacities			Export stage(-)***
Insufficient government support for exporting activities	Age(+)* Size(-)*** Export personnel(-)**	Age(+)** Size(-)***	Export experience(+)* Overseas personnel(+)**
Difficulties in Information Acquisition on EPPs	Size(-)** Export personnel(-)* Overseas personnel(+)*	Size(-)*** Export channel (+)*	Overseas personnel(+)*
Deficiency in proper foreign exchange management	Export stage(-)* IPR(+)** Overseas personnel(+)**	Export stage(-)* Export personnel(-)*** Overseas personnel(+)**	Age(-)* Size(+)* IPR(+)** Overseas personnel(+)*

Note: The signs in parentheses are those of the estimated coefficients in ordered logistic regression, and *, **, and *** indicate the significance level of 10%, 5%, and 1%, respectively.

constraints. The lower the stage of exports, the smaller the size of the enterprises, and the lower the share of export representatives, manufacturing firms feel more challenges, especially for marketing, branding and foreign exchange management bottlenecks.

Meantime, the relationship between a firm's characteristics and the binding constraints to exports is more complex for the case of service firms. The lower share of export representatives relative to total employment leads to high concern on the lack of marketing experts, weak brand reputation, and difficulty in overseas distribution. Likewise the lower share of employees in overseas branches or subsidiaries incurs more challenges in information acquisition and foreign regulation. On the other hand, firms with a higher share of employees overseas report more concern on insufficient government support and weak capacity to manage foreign exchange. Finally, firms possessing IPRs reveal greater need for government support in the areas of export credit, branding and foreign exchange management.

4 Conclusion

This paper provides a comparative study on the effectiveness of EPPs between manufacturing and service firms, based on a survey analysis for Korean companies. In particular, we explore the relationship among the characteristics of individual firms, the key barriers to trade for these firms and the effectiveness of EPPs. We find the following: first, our estimation results indicate that the net impact of export promotion programs on individual firms' export performance, after controlling for firm-level heterogeneity, tends to be more significant for manufacturing firms than for service firms. Second, regardless of individual firm's status or characteristics, bottlenecks in overseas marketing, such as the lack of marketing experts and the difficulty in securing foreign distribution networks, are the most binding constraints to exports. Third, while firms have different needs for public export support depending on their own characteristics, this mechanism is more complex for service firms relative to manufacturers. Overall, our analytic results indicate that more carefully-designed EPPs are needed to achieve export promotion in the

service sector:

Given a paucity of research focusing on examining the effectiveness of EPPs for firms engaging in cross-border service transactions, our study raises several important policy questions regarding EPPs for service firms. First of all, we need to answer the question why the net impact of export promotion programs is less significant for service firms. It could be due to the inherent characteristics of the service itself, or to the current design of EPPs that might be in favor of manufacturers. In addition, since our survey-based research might be potentially exposed to several empirical problems, further studies based on more objective quantitative data should be definitely followed to verify the genuine effectiveness of export promotion programs.

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Appendix

Table A.1 Empirical variable construction

Variable	Descriptions
Age	The number of years after its establishment (As of 2013)
Size	The total annual number of employees averaged for the period of 2009–12 (Logged value) In the case of companies which are not providing information of employees for the whole period, it is replaced by data of year 2011 or 2012
IPR	Dummy variable for technological capability $IPR_i=1$ if a firm possesses at least one IPR as of 2013 $IPR_i=0$ otherwise
Export experience	The number of years passed since the firm engaged in exports for the first time (as of 2013)
Export stage	Categorical variable - Group 1: Non-exporters seeking potential export opportunities - Group 2: Companies currently exporting to at most one country but irregularly - Group 3: Companies currently exporting to at most one country regularly - Group 4: Companies exporting to at least two countries but irregularly - Group 5: Companies exporting to at least two countries regularly
Exporting Channel	Categorical variable - Group 1: Firms exporting directly to foreign buyers without an overseas foothold or using domestic trade agents - Group 2: Firms exporting through a foreign trade representative or through an overseas branch, associated company, or a foreign subsidiary
Export destination	Dummy variable for export market $EX_{destine,i}=1$ if the main export destination is developing country regions $EX_{destine,i}=0$ otherwise
Export personnel	The average proportion of workforce in export departments compared to total number of employees for the period of 2009–12.
Overseas personnel	Year 2009~2012 Average of ratio of employees in international branches compared to total number of employees In the case of companies which are not providing information for the whole period, it is replaced by data of year 2011 or 2012
Policy Utilization	The total number of EPPs to which each firm has been exposed

Table A.2 Empirical result I-1: Manufacturing firms

	New Market	Exports Revenues	Profitability	Brand Reputation	Global Mindset
Age	-0.0123 (0.0091)	-0.0167 (0.0085)*	-0.0233 (0.0089)***	-0.0083 (0.0090)	-0.0100 (0.0086)
Size	0.0150 (0.0813)	0.0074 (0.0772)	-0.0267 (0.0746)	-0.0942 (0.0803)	0.0622 (0.0768)
IPR	0.4922 (0.1862)***	0.5051 (0.1886)***	0.4927 (0.1884)***	0.5047 (0.1829)***	0.4514 (0.1814)**
Export experience	0.0075 (0.0117)	0.0056 (0.0114)	0.0215 (0.0110)**	0.0084 (0.0115)	0.0052 (0.0109)
Exporting channel	-0.2142 (0.1990)	-0.063 (0.2006)	0.1193 (0.1944)	-0.0055 (0.2016)	-0.2215 (0.1952)
Export destination	-0.0452 (0.1558)	0.0005 (0.1559)	-0.0760 (0.1574)	-0.1546 (0.1548)	-0.0771 (0.1508)
Export personnel	1.5170 (0.6815)**	1.6233 (0.5398)***	2.0652 (0.5502)***	0.6165 (0.5863)	0.2142 (0.5540)
Overseas personnel	-0.3861 (0.7976)	-0.7928 (0.7405)	-1.2468 (0.7507)*	-0.6521 (0.7953)	0.1449 (0.7380)
Dum_ex-exporter	0.1911 (0.3487)	0.3784 (0.3511)	-0.1083 (0.3453)	-0.0586 (0.3395)	0.1812 (0.3175)
Dum_sporadic	0.8721 (0.3055)***	1.0447 (0.3031)***	0.7011 (0.2988)**	0.5769 (0.3074)*	0.7070 (0.2871)**
Dum_regular	0.6858 (0.2996)**	0.9422 (0.2930)***	0.4935 (0.2812)*	0.4081 (0.2896)	0.4110 (0.2692)
Policy utilization	0.2817 (0.0545)***	0.2025 (0.0553)***	0.1270 (0.0495)***	0.2862 (0.0660)***	0.1753 (0.0580)***
No. of observations	347	337	345	345	345
Log pseudo-likelihood	-195.25	-197.16	-205.28	-197.17	-210.20
Pseudo R ²	0.1808	0.1544	0.1365	0.1461	0.1006

Note: Industry dummies are included in estimation, but not reported. The standard errors are shown in parentheses, and *, **, and *** indicate the significance level of 10%, 5%, and 1%, respectively.

Table A.3 Empirical result II-1: Service firms

	New Market	Exports Revenues	Profitability	Brand Reputation	Global Mindset
Age	-0.0002 (0.0248)	0.0125 (0.0252)	0.0147 (0.0234)	-0.0280 (0.0213)	-0.0404 (0.0253)
Size	0.0126 (0.1247)	-0.0985 (0.1341)	-0.0802 (0.1273)	0.1398 (0.1233)	0.2537 (0.1320)*
IPR	0.7995 (0.3380)**	0.6122 (0.3492)*	0.8146 (0.3594)**	0.8472 (0.3306)***	0.8877 (0.3625)**
Export experience	-0.0099 (0.0287)	0.0152 (0.0260)	0.0119 (0.0274)	-0.0086 (0.0268)	-0.0317 (0.0289)
Exporting channel	0.2802 (0.3472)	0.3286 (0.3416)	0.5965 (0.3619)*	0.3580 (0.3597)	0.2263 (0.3493)
Export destination	-0.2632 (0.3614)	-0.6432 (0.3895)*	-0.4193 (0.3989)	0.2826 (0.3765)	-0.1156 (0.4016)
Export personnel	0.3294 (0.5251)	0.3979 (0.5535)	1.2762 (0.5460)**	0.0301 (0.5341)	0.3709 (0.5448)
Overseas personnel	0.1849 (1.2300)	-2.1070 (1.0632)**	0.0963 (1.0333)	-0.3501 (1.0580)	2.1467 (1.0708)**
Dum_ex-exporter	0.6410 (0.5894)	0.3082 (0.5710)	-0.1855 (0.5867)	0.5112 (0.5494)	0.5688 (0.6076)
Dum_sporadic	0.2619 (0.4281)	0.2610 (0.4213)	-0.0309 (0.4297)	-0.0314 (0.4498)	-0.1736 (0.4047)
Dum_regular	0.4086 (0.4343)	0.4065 (0.4570)	-0.4586 (0.4458)	0.0442 (0.4136)	0.0465 (0.4613)
Policy utilization	0.0831 (0.0827)	0.2555 (0.0913)***	0.1454 (0.0840)*	0.2665 (0.0992)***	0.2031 (0.0871)**
No. of observations	101	105	107	105	107
Log pseudo-likelihood	-62.12	-58.97	-59.27	-57.39	-57.12
Pseudo R ²	0.1095	0.1832	0.1922	0.2073	0.2259

Note: Industry dummies are included in estimation, but not reported. The standard errors are shown in parentheses, and *, **, and *** indicate the significance level of 10%, 5%, and 1%, respectively.

