

The Internationalization of Japanese Firms:

New findings based on firm-level data



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Profile

Professor Ryuhei Wakasugi, with a Ph.D. in Economics from Tokyo University, is currently a Professor at the Institute of Economic Research at Kyoto University. He became a Professor, Department of Economics at Yokohama National University in 1992, where he later went on to become Dean, Department of Economics (1998-2000) and Vice-President (2000-2003). Selected publications include "Offshoring and Trade in East Asia: A Statistical Analysis" (with Banri Ito and Eiichi Tomiura), *Asian Economic Papers*, 7(3), 101-124, 2008.

Though numerous studies exist on Japanese firms operating businesses internationally through export and foreign direct investment (FDI), few empirical studies have comprehensively described the real features of such firms. A research team, composed of RIETI Faculty Fellow Ryuhei Wakasugi and other researchers, conducted a multifaceted analysis to form an overall picture of internationalized Japanese firms, using individual data of firms operating businesses overseas, and sought to make a comparison with pioneering firm-level analyses on European firms. In this interview we spoke to Professor Wakasugi about the results of this analysis published in the paper by his research team, "The Internationalization of Japanese Firms: New findings based on firm-level data."

—In writing this paper with what mindset did you approach the problems?

Previous studies in the area of international trade have discussed internationally operating firms using representative firms, based on the assumption that they are all identical in structure. However, firms are heterogeneous. Since international business activities, such as export and overseas investment, are costly, it can be assumed that only firms that are profitable even after incurring such costs are engaged in export and FDI. Theoretical studies are deepening their analyses by modeling how only such high productivity firms are able to participate in international activities such as export and FDI.

Also, from an empirical aspect, there is an accumulation of studies in the U.S. that discuss the relationship between export and enterprise characteristics such as productivity, capital, skill intensity and scale of employment, and, based on findings from studies that incorporate the entire European Union as their subject, it is becoming apparent in Europe that international trade and FDI are conducted by a limited number of high productivity firms. In contrast, only a few studies have sought to grasp a comprehensive feature of Japanese firms engaged in export and FDI in the same manner as in the United States and Europe.

It was at this point that I was suggested by the Centre for Economic Policy Research (CEPR), a think tank in the United Kingdom with which RIETI has launched research cooperation, to conduct a project in Japan similar to that in Europe and I decided to undertake a study that seeks an accurate portrait of internationalized Japanese firms.

Detailed data of individual firms, i.e. individual data, are essential for these studies, and we undertook an analysis using the Basic Survey of Japanese Business

Structure and Activities and the Survey of Overseas Business Activities because we were able to obtain micro-level data from these statistics.

However, through the exchange of research, it has become clear that Europe and the U.S. are more advanced in terms of developing data. Particularly in Europe, certain countries like France, arrange data by firm, destination, and item, showing which firm exports what item to which country.

Through our study, which explores the characteristics of Japanese firms compared to their European counterparts, I also had the impression that the data needed to undertake such analysis were better prepared in Europe than in Japan. Behind the efforts being put into the development of data in Europe seems to be the consensus in the EU that policies to support the activities of international firms in export and FDI are necessary and therefore an environment for making essential statistical data available to the researchers has been in place since the integration of the EU.

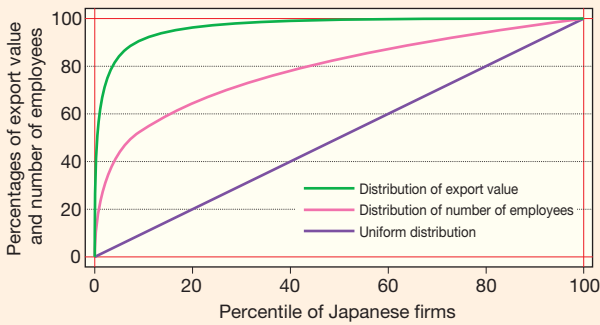
Firms in top 10% account for 90% of total exports

—What percentage of total trade and investment does the small number of highly productive internationalized Japanese firms account for?

Figure 1 shows that export manufacturing firms in the top 10% account for 92% of the total export value in 2003. Export manufacturing firms are characterized by a high ratio of leading firms to total exports, with those in the top 5% accounting for 85% of the total and a small group of firms in the top 1% making up 62%. The figure also indicates that although the trend of concentrating on higher tier firms can be observed in its number of employees, the degree of concentration of higher tier firms is even stronger in the total export value.

Figure 1 Share of export value and the number of employees of higher tier export firms

(Japanese manufacturing firms with 50 or more employees, 2005)



Note: On the horizontal axis, firms are lined up from the left in the order of export value. The vertical axis shows the percentages of the cumulative export value and cumulative number of employees. The figure shows that the greater the deviation from the straight line in the middle, the more concentrated in higher tier export firms the export value and the number of employees are.

Source: Calculated by the authors based on the "Basic Survey of Japanese Business Structure and Activities" from the Ministry of Economy, Trade and Industry (METI)

The trend concentrating on higher tier firms is not a temporary phenomenon, in fact it barely changed during the period between 1997 and 2005. It is therefore reasonable to say that a limited number of firms have been undertaking a fairly large portion of exports for a long time. However, it is worth noting that the share of firms in the top 1% has been declining slightly in recent years, indicating that entry into export has been progressing.

Meanwhile, in Europe, the trend of a handful of firms playing a large role in exports is the same, and one research literature calls the small number of such large firms with high productivity, "The Happy Few." This phrase is taken from the king's speech in Shakespeare's *The Life of King Henry the Fifth*, where he encourages his army, praising them as "the happy few."

– Before discussing the characteristics of internationalized firms, please give us your definition of an internationalized firm.

We define firms that export or perform FDI as "internationalized firms." Firms that do neither are "non-internationalized firms," or "domestic-oriented firms."

When discussing in chronological order, we exclude firms that have ceased export and FDI activities at some point in time from "internationalized firms."

Performance of internationalized firms substantially exceeds that of non-internationalized

– What are the characteristics of internationalized firms?

We examined the performance of internationalized firms and domestic-oriented firms. First, we calculated how much the average values of export firms exceed those of non-export firms in five categories: the number of employees, added value, wages, capital intensity, and skill intensity. We checked whether the ratio of the average value of export firms to that of non-export firms (the "premium") exceeded 1. Similarly, we also checked how much the average value of FDI firms exceeded that of non-FDI firms.

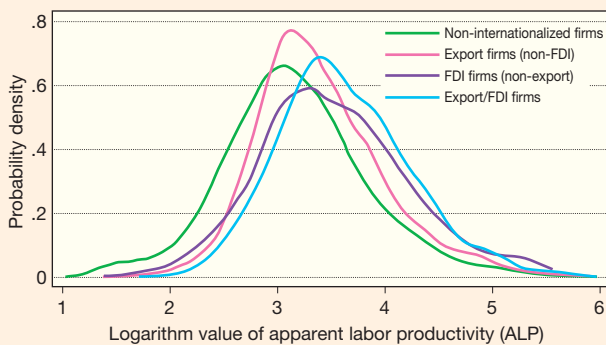
Table 1 Premiums of export firms and FDI firms

Country	Premium in number of employees	Premium in added value	Premium in wages	Premium in capital intensity	Premium in skill intensity
Premiums of export firms					
Japan	3.02	5.22	1.25	1.29	1.58
Germany	2.99		1.02		
France	2.24	2.68	1.09	1.49	
Britain	1.01	1.29	1.15		
Italy	2.42	2.14	1.07	1.01	1.25
Hungary	5.31	13.53	1.44	0.79	
Belgium	9.16	14.8	1.26	1.04	
Norway	6.11	7.95	1.08	1.01	
Premiums of FDI firms					
Japan	4.79	8.79	1.26	1.53	1.52
Germany	13.19				
France	18.45	22.68	1.13	1.52	
Belgium	16.45	24.65	1.53	1.03	
Norway	8.28	11	1.34	0.87	

Source: Figures of Japanese firms are calculated by the authors using "Basic Survey of Japanese Business Structure and Activities" by METI, 2003. For other countries, the figures are cited from Mayer and Ottaviano (2007).
Note: Figures in the table are the premiums in each variable as the ratio of export (FDI) firms to non-export (non-FDI) firms. Figures in parentheses are the ratio of standard deviations. For Japan, data include only firms with 50 or more employees, and for France, Germany, Hungary, Italy and the United Kingdom, data include only large firms. For Belgium and Norway, data include all firms.

As **Table 1** clearly shows, the premium exceeds 1 in all of the five categories—number of employees, added value, wages, capital intensity, and skill intensity—in all countries, excluding only a few exceptions. In other words, export/FDI firms employ more workers, create higher added value, pay more wages and are more capital intensive and skill intensive than non-export/non-FDI firms.

Figure 2 Distribution of labor productivity (ALP) of FDI firms, export firms, and non-internationalized firms in Japan (2005)
(Japanese manufacturing firms with 50 or more employees)



Note: Apparent labor productivity (ALP) means sales per worker. The figure shows the distributions of apparent labor productivity (ALP) for non-internationalized firms, export firms (non-FDI), FDI firms (non-export), and export/FDI firms.
Source: Calculated by the authors based on "Basic Survey of Japanese Business Structure and Activities" by METI

Secondly, as **Figure 2** shows, the productivity of domestic-oriented firms is the lowest, followed by firms that export or conduct FDI and the productivity of firms that do both is the highest. In the figure, the further right of center the distribution is located, the higher the productivity. Although labor productivity is used in the figure as an indicator of productivity, the same result would be obtained even if a different indicator was used (e.g. total factor productivity (TFP)).

The results coincide with a theoretical research finding that as export and FDI are more costly than domestic business activities, the productivity of firms needs to be high in order to make a profit as well as covering the costs.

—Are there any differences in the characteristics between Japanese and European firms?

Although similar study results are obtained for both European firms and Japanese firms, **Table 1** shows that the difference in the performance between export/FDI firms and domestic-oriented firms is more evident in Europe than in Japan. For example, in FDI firms, the premium for the number of employees is 4.79 in Japan, but in Germany it is 13.19 and 18.45 in France; substantially above 10. Given such a large difference between Japan and Europe, there is the possibility that some other factors are at work, even though difference in productivity is an important factor for explaining the difference in performance between internationalized firms and domestic-oriented firms.

We may need to take into account, for example, that the destinations of export and investments of European firms are concentrated in other European countries which are relatively similar in character to the home countries where these firms are headquartered. However, in the case of Japanese firms, Asia, which comprises a high proportion of the destination of export and investments, is not necessarily similar to Japan. For example China, Japan's largest trading partner, is very different in terms of relative abundance in capital and technology. This implies a need for theory and empirical analysis that take these perspectives into account.

Rising productivity is backed by advancing internationalization

—To what do you attribute the high performance of internationalized firms?

Internationalized firms have high enough productivity to cover the costs of investment and other international activities, and there are two explanations for this. One is the belief that out of the vast number of firms, only those achieving a high level of productivity are

capable of surviving. This is called a “self-selection” hypothesis. Here, productivity is measured using existing research outcomes, such as research and development, and technological innovations.

The other is an explanation based on the relationship that obtaining knowledge on foreign markets and absorbing technologies abroad through internationalization will lead to higher productivity in firms. This is called a “learning by doing” hypothesis.

–What results did you obtain from your analysis of these hypotheses?

Various empirical studies have been conducted regarding the causal relationship between the internationalization and productivity of firms. Although the self-selection hypothesis is widely accepted, evaluation of the “learning by doing” hypothesis has not yet been established. In this paper we added some further simple examinations to these hypotheses.

Using a group of firms not yet internationalized as of 2000 as subjects, we examined how the productivity of a group of firms internationalized (i.e. exported or performed FDI) in 2001 changed in comparison with another group of firms that remained domestic-oriented by using the data on changes in their labor productivity from 2000 to 2005. The result revealed a tendency for internationalized firms to have higher labor productivity compared with those not internationalized. Even though it is difficult to conclude that internationalization is the only reason for the difference in labor productivity between the two groups, it may possibly have some impact on the difference in productivity.

More rigorous study and discussion will be necessary to make further arguments. However, if advancement in internationalization can improve productivity, this will become a strong policy message because it means that internationalization is desirable for the overall economy

from the standpoint of improving the firms’ productivity, as limited resources need to be used effectively for productivity to improve.

Number of firms moving overseas is influenced by costs of trade and investment

–You also analyzed the link between the internationalization of firms and the distance to investment destinations.

We originally wanted to conduct a factor analysis of changes in trade value with partner countries by breaking them down into the number of firms moving to host countries and the trade value per firm. An analysis using trade value is possible in Europe because firm-level trade value data by partner country and category can be obtained. In contrast, such firm-level trade data is not available in Japan, so we kept an eye on the sales of overseas subsidiaries through FDI.

Dividing the reasons for an increase in local sales (sales turnover) of overseas sales subsidiaries of Japanese firms into an increase in sales per firm and an increase in the number of firms (overseas sales subsidiaries), we used a gravity model to analyze how elements such as the economic scale of a host country and the distance from Japan to a host country influence these components.

Table 2 Impact of economic scale and distance
(Results of estimates in gravity model)

	Sales per firm	Number of firms that move to investment destinations
GDP (economic scale)	0.51***	0.6***
Distance	-0.24**	-1.26***

For *** and **, 1% and 5%, respectively, indicate the figures are statistically significant.

The result (**Table 2**) shows that the economic scale of a host country has an impact on the number of firms and sales per firm in a similar degree, while the distance from Japan to a host country has a significant effect on the

number of firms that move to investment destinations. In short, the difference in distance to investment destinations has an impact on total sales of Japanese firms by changing the number of firms that move to the host countries.

–Are there any distinctive differences by industry?

Looking at the trend by industry, the distance from Japan has a large (negative) impact on local sales for the electric machinery sector. Conceivably this sector, including parts manufacturers, has a strong tendency toward carrying out production in neighboring countries and sales in international markets. On the other hand, the influence of distance is considered to be relatively small in the automobile sector, even though it is the same basic industry, because of its strong tendency to sell products in the domestic market of countries of production, as in the case of the United States.

–What kind of policy implications can we obtain from these analysis results?

I think the reason why the distance from Japan has a predominant impact on the number of firms is that many Japanese firms conduct corporate activities, such as local selling and export, through direct investment in East Asia. More specifically, distance represents costs of trade between countries, and therefore our analysis also shows that the number of firms sharply declines if transactions between countries become expensive.

From the results of this analysis we can draw a policy implication that measures for creating an environment in which firms can do business freely at a low cost of trade will allow more firms to participate in the flow of internationalization.

–What issues are you looking at for your future research?

As I said before, productivity may not be the sole determinant of internationalization. For example, viewing a concentration of firms like a production area, it is conceivable that external economic factors, elements outside firms such as the accumulation of information and the education of human resources, could contribute to internationalization. Other external economic factors that could have an impact on internationalization include policies that eliminate financial constraints. I therefore believe that it is also important to advance our research while taking these factors into account.

Given that up until now there has been a tendency to argue that FDI is based on a Western-style notion of horizontal investment that assumes homogeneity of investment destinations, it may not be possible to apply this notion without modification for Japanese firms that make a number of investments in Asian countries with different standards from Japan. This may imply the need to devise ways for models to reflect the actual circumstances in Japanese firms.

In addition, by theoretically calculating the cutoff point that differentiates domestic-oriented firms from internationalized firms, we have realized the difference between European firms and Japanese firms. Examining the reasons for this is also an important issue.



Presentation at RIETI's workshop