J. Japanese Int. Economies 41 (2016) 17–29

Contents lists available at ScienceDirect

Journal of The Japanese and International Economies

journal homepage: www.elsevier.com/locate/jjie

Exchange rate exposure and risk management: The case of Japanese exporting firms☆

Takatoshi Ito[a,b], Satoshi Koibuchi[c], Kiyotaka Sato[d], Junko Shimizu[e,*]

[a] *School of International and Public Affairs, Columbia University, IAB Rm 927, MC 3333, 420 West 118th St., New York, NY 20017, USA*
[b] *National Graduate Institute for Policy Studies*
[c] *Faculty of Commerce, Chuo University, 742-1 Higashinakano Hachioji-shi, Tokyo 192-0393, Japan*
[d] *Department of Economics, Yokohama National University, 79-1 Tokiwadai, Hodogaya-ku, Yokohama 240-8501, Japan*
[e] *Faculty of Economics, Gakushuin University, 1-5-1 Mejiro, Toshima-ku, Tokyo 171-8588, Japan*

ARTICLE INFO

Article history:
Received 20 October 2015
Revised 5 May 2016
Accepted 8 May 2016
Available online 11 May 2016

JEL Classification:
F31
G15
G32

Keywords:
Exchange rate risk management
Invoice currency
Operational hedge
Financial hedge
Exchange rate pass-through

ABSTRACT

This paper investigates the relationship between Japanese firms' exposure to the exchange rate risk and their risk management. Following Dominguez (1998) and others, we first estimate the firms' exposure to the exchange rate risk by regressing their stock prices on the exchange rate and the market portfolio. We next investigate possible influences of various risk management measures on the firms' foreign exchange exposure. Risk management variables include financial and operational hedging, the invoice currency choice, and the price revision strategy (pass-through) of 227 listed firms in 2009, which were collected from a questionnaire survey of Japanese firms listed in the Tokyo Stock Exchange. Our main findings are as follows: First, firms with greater dependency on sales in foreign markets have greater foreign exchange exposure, judged by the market. Second, the higher the US dollar invoicing share, the greater the foreign exchange exposure is, which can be reduced by both financial and operational hedging. Third, yen invoicing reduces foreign exchange exposure. These findings indicate that Japanese firms use a combination of risk management tools to mitigate the degree of exchange rate risk.
© 2016 Elsevier Inc. All rights reserved.

1. Introduction

A period of strong yen squeezes the profits of Japanese exporters either by lower sales with higher prices, in case yen appreciation is passed through to retail prices in the destination market, or by a decline in the profit margin, in case it is not passed through to the destination market. Between 2008 and 2012, the yen appreciated vis-à-vis the US dollar by more than 30%. Since the yen was floated in 1973, Japanese firms have continuously had concerns and struggled with yen appreciation, and this time was no exception.

Various ways to manage foreign exchange risk have been developed by the Japanese exporters over time. Even though some production bases have been moved abroad, significant production capacity remains in Japan. This production is still exposed to the exchange rate risk—a long-term yen appreciation trend and short-term volatility.

Japanese firms usually use both financial and operational hedges to manage their currency exposure. Financial hedges are conducted mainly with the use of currency derivatives, while operational hedges are devised in the firm's international transactions between the head office and foreign subsidiaries. With the development of financial hedge techniques, such as forward transactions, currency swaps, and currency options, firms can hedge their currency exposure against foreign exchange risks. However, these transactions, which determine the yen receipt with certainty if fully hedged, can be used only within a timespan of several months, and with some costs. Financial hedges cannot be effective in the long-run. In response to the unprecedented level of the strong yen in the mid-1990 s, Japanese exporting firms have accelerated moving production bases to and expanding those already located in foreign countries. The firms have also increased the proportion of imported components from overseas and taken

☆ The authors would appreciate the financial support of the JSPS (Japan Society for the Promotion of Science) Grant-in-Aid for Scientific Research; Ito for (A) -25,245,044; Koibuchi for Young Scientists (B) No. 23730307Sato for (A) No. 24,243,041 and (B) No. 24,330,101, and Shimizu for (C) No. 24,530,362 and No. 15K03548. This survey is supported by the Research Institute of Economy, Trade and Industry (RIETI) and the Ministry of Economy, Trade and Industry (METI). We wish to thank all respondents of firms and RIETI staff for their kind help and cooperation.

* Correspondence author.
E-mail addresses: ti2164@columbia.edu (T. Ito), koibuchi@gmail.com (S. Koibuchi), sato@ynu.ac.jp (K. Sato), junko.shimizu@gakushuin.ac.jp (J. Shimizu).

http://dx.doi.org/10.1016/j.jjie.2016.05.001
0889-1583/© 2016 Elsevier Inc. All rights reserved.

other counter measures to mitigate the damage from the stronger yen[1].

It is well-known that Japan is an outlier in the pattern of invoicing currencies. According to "stylized facts" of the choice of invoice currency, which were developed in the 1970 s following the seminal work of Grassman (1973), trades between two economically advanced countries tend to be invoiced in the exporter's currency, and trade between economically advanced and developing countries is generally invoiced in the advanced country's currency. However, Japan's currency invoicing pattern differs from these stylized facts[2]. According to the Ministry of Finance data, Japanese exporters have a strong tendency to choose the importer's currency for their exports to advanced countries such as the US and EU. For exports to Asia, the US dollar, which is the currency of the third country, is commonly used. This is one of the reasons why currency risk management is a serious problem among Japanese firms. If their exports were invoiced in yen, their business performance would not have been affected as much as it has actually been during the strong yen periods. Besides invoicing, firms can change export prices, even if the invoicing currency is in yen in the medium-term (in the next export contract period). How often firms adjust export prices in response to the exchange rate (i.e., pass-through) is a variable that the firms choose to decide. If firms are so competitive that they can raise their product prices to offset losses from yen appreciation, then the exchange rate fluctuations would not cause any severe impact on their profit performance. Accordingly, the medium-term effectiveness of exchange risk management depends on the choice of invoicing currency and the degree of pass-through, both of which depends on competitiveness of products.

So how can the effectiveness of Japanese firms' exchange rate risk management be measured? One possible way is to measure each firm's exchange rate exposure, and to investigate the relationship between this exposure and the exchange rate risk management. We follow previous studies (such as Dominguez (1998) and Doukas et al. (2003)) that have derived exchange rate exposure by estimating the sensitivity of firms' cash flows to the fluctuations in the exchange rate. The value of a firm is the present value of its future cash flow stream, and the current exchange rate variation will affect the cash flows in the future. To date, many empirical studies have used stock price returns as a proxy for the firm value, and have obtained exchange rate exposure from a regression of stock price returns on an exchange rate change. Although the issue of how to measure firms' exposure to the exchange rate fluctuations has been investigated by many researchers in the field of corporate finance, few existing studies have specifically undertaken the firm level analysis of the exchange rate exposure and exchange rate risk management including the choice of invoice currency and pass-through policy.

In order to obtain information on how export firms are coping with the exchange rate fluctuation, a specifically-designed questionnaire survey was designed and conducted with the cooperation of the Research Institute of Economy, Trade, and Industry (RIETI). Questionnaires were sent in September 2009 to 920 Japanese manufacturing firms. They were selected among those listed on the Tokyo Stock Exchange with the criterion that they reported foreign sales in the consolidated financial statements in fiscal year 2008 and 2009. Our sample firms are those that responded to the RIETI Survey 2009. We had 227 samples spreading across 15 industries: Food, Textile, Chemicals, Medicinal Chemicals, Coal and Oil Products, Rubber Products, Glass and Stone Products, Iron and Steel, Non-Metal Products, Metal Products, General Machinery, Electrical Machinery, Transport Equipment, Precision Instruments and Other products. The response rate was 25% (=227/920). This survey (hereafter, the 2009 RIETI survey) provided us with new information on these Japanese firms' use of financial and operational hedging, price revision in response to the exchange rate changes, and choice of invoicing currency. The survey results are aggregated by industry and by the firm size, using annual financial reports of sample firms. See Appendix A for the basic information about responding firms.

Our analysis shows how Japanese firms combine three different tools of exchange rate risk management, such as operational and financial hedging, and exchange rate pass-through under their own choice of invoicing currency, to reduce their exchange rate exposure. Given a growing regional production network of Japanese firms, our findings based on the questionnaire study will present important implications for future exchange rate policies to support more effective exchange rate risk management.

The remainder of this paper is organized as follows. Section 2 reviews earlier literature of firms' foreign exchange risk management and presents a discussion of the relationship between the variety of exchange rate risk management and invoicing currency choice conducted by Japanese firms. Section 3 summarizes the stylized facts of 2009 RIETI Survey related to Japanese firms' exchange rate risk management. Section 4 reviews the methodology of firm exchange rate exposure and presents our estimation results. Section 5 conducts empirical analyses to find the relation between exchange rate risk management and the exchange rate exposure. Finally section 6 concludes this paper.

2. Exchange rate risk management of Japanese firms

2.1. Variety of exchange rate risk management

Numerous empirical studies have examined the question of how firms accommodate or mitigate foreign exchange risk. Usually, firms use two means to hedge exchange rate risk. One is a financial hedge through financial market instruments such as exchange rate derivatives or foreign currency debt; and an operational hedge through operational organization of the exporting firm. To manage long-term exchange rate risks effectively, firms should build operational hedging strategies in addition to widely used financial hedging strategies. Most studies specifically examine currency hedging.[3] These studies analyze the relation between operational hedging and financial hedging, and underscore the effectiveness of both strategies by conducting empirical analysis based on the firms' stock price returns. For example, Pantzalis et al. (2001), using a sample of 220 US multinational firms, found that operational and financial hedges are complementary risk management strategies. Hommel (2003), shows that operational hedging creates flexibility, a strategic complement to financial hedging. Allayannis et al. (2001), also investigate both financial and operational exchange-

[1] Japanese exporting firms might not have to stabilize their profits in terms of the yen, if they become more globalized. Indeed, Japanese major exporting firms tend to establish a large number of overseas production and sales subsidiaries, with large amounts of foreign sales. However, such globalized firms account for a small share of Japanese total manufacturing firms in terms of the number of firms. As discussed in Table 3.2 below, the firms whose size is medium or small in terms of consolidated sales or the ratio of foreign sales to consolidated sales tend to choose not U.S. dollar invoicing but yen-invoicing. This evidence suggests that smaller size firms tend to avoid foreign exchange risk and to stabilize their profits in terms of the yen. For global firms, yen depreciation (appreciation) will increase (decrease) the amount of repatriation in terms of the yen, given a large amount of Japanese income surplus in recent years. Thus, for Japanese firms, avoiding exchange rate risk and stabilizing their profits in the yen are still an important business strategy.

[2] Ito et al. (2010a,b, 2012) investigate this puzzle by conducting and analyzing a series of interviews of representative exporters.

[3] For example, Carter, Pantzalis et al. (2001) investigate the impact of firmwide risk management practices for US multinational corporations and find that currency risk can be reduced effectively through transactions in the forward exchange market.

Download English Version:

https://daneshyari.com/en/article/964878

Download Persian Version:

https://daneshyari.com/article/964878

Daneshyari.com