ELSEVIER

International Review of Economics and Finance 16 (2007) 223–236

International Review of Economics & Finance

www.elsevier.com/locate/iref

Exchange rate pass-through in the U.S. automobile market: A cointegration approach

Nilanjan Banik, Basudeb Biswas *

Department of Economics, Utah State University, 3530 Old Main Hill, Logan, UT 84322-3530, United States

Received 20 June 2003; received in revised form 14 October 2004; accepted 18 May 2005
Available online 13 June 2005

Abstract

This study analyzes exchange rate pass-through in the presence of monopolistic competition in the U.S. automobile market. Using cointegration techniques, we investigate how foreign competing firms' prices interact following an exchange rate-shock. The results generally indicate price interdependence (competition) among the rival firms. In one case where we did not find any price interdependence, the extent of exchange rate pass-through was higher. This validates the economic intuition that a low degree of price competition corresponds with a high degree of exchange rate pass-through.

JEL classification: C32; D21; F12; L11
Keywords: Cointegration analysis; Exchange rate pass-through; Price competition; U.S. automobile market

1. Introduction

Most economies in the world are under the flexible exchange rate system, where the external value of the currency relative to any other foreign currency is determined in the foreign exchange market. The floating exchange rate system has provided an impetus to investigate the effect of exchange rate movements on prices of some imported products, like automobiles. By examining the effect of exchange rate movements on import prices (denominated in local currency) and investigating pricing interaction

* Corresponding author. Tel.: +1 435 797 2304.
E-mail address: biswas@econ.usu.edu (B. Biswas).

1059-0560/$ - see front matter © 2005 Elsevier Inc. All rights reserved.
doi:10.1016/j.iref.2005.05.001

between rival firms in a destination market, we determine the extent of competition in the U.S. automobile market.

Under the “small” country assumption (i.e. the importing country is assumed to be a price taker in the world market) we would expect the local currency price of imported goods (automobiles) to increase (decrease) by the same extent of depreciation (appreciation) of the local currency. However, we observe that the local currency price of imported automobiles originating from a particular nation does not change pari passu with the exchange rate movement. This phenomenon occurs when the foreign firm is facing competition in the U.S. market. Because the foreign firm generally sells products in a country different from where they are produced, a change in the bilateral exchange rate affects the cost side of the firm. However, because of concerns about losing market share, the foreign firm does not change the local currency price to fully reflect changes in the bilateral exchange rate.

Consider a foreign firm that exports a product in the U.S. market, where it has some market power, and hence faces a downward sloping demand curve for its product. A dollar depreciation leaves the firm with three choices: decrease its markup of price over marginal cost so as to maintain the dollar price of its product at the same level as it was before depreciation; increase the dollar price to reflect depreciation; or, some combination of both. Which option the foreign firm chooses depends on the extent of competition. If the local market condition is perfectly competitive and the local currency depreciates only against a particular foreign firm’s home currency then the foreign firm will not raise its import price. A price increase would cause the firm to lose its entire market share to firms from other countries that do not raise their prices. For example, between January 1994 and April 1995, the price of a Toyota Celica ST Coupe made in Japan increased by less than 2%, even though there was a 34% appreciation of Japanese yen relative to U.S. dollars over the same period (Goldberg & Knetter, 1997).[1] On the other end of the spectrum, if the foreign firm is a monopolist then the dollar price of its exports will increase to the full extent of depreciation. Feenstra (1989) shows that when a monopolist sells into a foreign market there is a symmetric response of local currency import prices to changes in the bilateral exchange rate.

In empirical work, we are more likely to encounter cases between price taking and price making behavior. In the case of oligopoly, changes in local currency import prices due to exchange rate movement can be expected to be somewhere between what we would observe under monopoly or perfect competition.[2] Hence, the change in local currency prices, resulting from an exchange rate movement, varies. In the literature, this phenomenon is known as exchange rate pass-through (ERPT). It means the percentage change in local currency import prices resulting from a percentage change in the exchange rate between the exporting and the importing nations. A one-for-one response of import prices to exchange rate changes is known as full or complete exchange rate pass-through. Accordingly, a high (low) degree of price competition corresponds to the low (high) degree of ERPT. The degree of ERPT can therefore be used as one indicator of the extent of price competition faced by sellers.

[1] A dollar depreciation relative to the foreign currency may lead to significantly higher incidence of antidumping petitions. A few studies have examined the effect of exchange rate movement on filing of antidumping measures. For example, Feinberg (1989) examines the effect of exchange rate movements on US antidumping filings across four import source countries, Brazil, Japan, Korea and Mexico. The paper finds that a U.S. dollar depreciation relative to foreign currency leads to a significantly higher incidence of antidumping petition.

[2] Throughout the analysis we assume, price = marginal cost, as a perfectly competitive market conduct; and price > marginal cost, as an imperfectly competitive market conduct.