

### **Exchange Rate Pass-Through**

Exchange rate pass-through can be defined as the degree of sensitivity of import prices to a one percent change in exchange rates in the importing nation's currency. A closely related term is pricing-to-market (PTM), which refers to the pricing behavior of firms exporting their products to a destination market following an exchange rate change. More to the point, pricing-to-market is defined as the percent change in prices in the exporter's currency due to a one percent change in the exchange rate. Thus, the greater the degree of pricing-to-market, the lower the extent of exchange rate pass-through.

At the one extreme, if import prices change by the same proportion as the change in the exchange rate, the result is full or complete pass-through and hence no pricing-to-market. At the other extreme, if exporters adjust prices in their own currency by the same proportion as the exchange rate change but in the opposite direction, the result is full pricing-to-market but no or zero pass-through of the exchange rate change into the destination market prices. More generally, if exporters alter the export prices in their own currency by a proportion smaller than the exchange rate change, then exchange rate pass-through is said to be partial or incomplete. The degree of exchange rate pass-through and pricing-to-market behavior has important bearings on economic policy. If pricing-to-market is high and exchange rate pass-through low, then any exchange rate-based adjustments to improve the trade balance for economies may be less effective, as nominal exchange rate changes do not translate into real exchange rate changes.

While these concepts have been well known to economists for a long time, they attracted particular interest following the Plaza Accord in 1985 and the subsequent sharp appreciation of the Japanese yen in relation to the US dollar. Following this strengthening of the yen, other things equal, one would have expected the unit price of Japanese products sold in the US (in US

dollars) should also have risen sharply. However, in reality, the price of Japanese cars and electronic items sold in the US rose only marginally or remained constant, and in some cases actually declined (Goldberg and Knetter, 1997). This suggested that the Japanese firms exporting products to the US may have been absorbing a large part of the exchange rate changes to maintain market share. Given this important empirical observation, economists began trying to estimate the extent of exchange rate pass-through as well as to analyze the determinants of exchange rate pass-through and the corresponding pricing-to-market behavior.

### **What Determines Exchange rate pass-through?**

Among the most important factors that determine the extent of exchange rate pass-through are the size of the export market and the degree of competition the exporter faces in that market. If the export market for the product is large, then exporting firms are often willing to absorb a proportion of the exchange rate change so as not to lose market share. This is particularly so if the industry is highly competitive. The presence of a large number of suppliers selling similar goods in the market provides domestic consumers with a choice of many substitutes, making them relatively price-sensitive. Conversely, if the industry is highly differentiated and exporters do not face much competition for their products, then exporter prices may be somewhat less responsive to exchange rate changes. In this situation, pricing-to-market will be lower and the corresponding pass-through will be higher. For example, exports to certain competitive industries in the US, such as autos and alcoholic beverages, showed relatively high pricing-to-market and corresponding lower exchange rate pass-through as exporters try to preserve market share (Knetter, 1993).

The direction, duration, and magnitude of exchange rate changes also affect pass-through. If the currency of the destination market depreciates, then exporters may be willing to absorb this exchange rate change to keep local currency price of their products stable and retain market share. In this situation, exchange rate pass-through may be low or incomplete. However, if the currency of the destination market strengthens, the exporter's good [product? Goods?] will be relatively cheaper and the exporting firm may engage in complete exchange rate pass-through. In other words, the response of exporters to exchange rate changes may be asymmetric, depending

The high costs of changing prices, as well as the possibility that frequent changes in unit sales prices (in the destination market's currency) can adversely affect a firm's reputation, may prevent firms from passing through temporary fluctuations in exchange rates. When exchange rate changes are large or appear to be permanent, however, exporting firms are more likely to pass through the changes to avoid a sharp reduction in their profit margins.

### **Low and Declining Exchange Rate Pass-through**

Exchange rate pass-through generally has a greater effect on import prices than on a nation's consumer price index (CPI). This is because the latter includes non-tradables that are less responsive to exchange rate changes. Regardless of the price index used, however, exchange rate pass-through was lower in the 1990s than in the 1980s, and has continued to decline. While most of the research has focused on developed countries, where more data is available, recent studies suggest that the conclusion holds for developing countries as well (Ghosh and Rajan, 2006).

Exchange rate pass-through may also depend on a country's monetary and exchange rate policies. The more stable a country's monetary policy and the lower its rate of inflation, the

lower the extent of exchange rate pass-through will be, as it is less likely that foreign exporters will pass through exchange rate changes (Taylor, 2000). This in turn helps to sustain low inflation and makes monetary policy more effective. As such there may be a “virtuous cycle” between stable monetary policy and low exchange rate pass-through.

If exports are invoiced in the currency of the importing nation--known as consumer-currency pricing (CCP) or local-currency pricing (LCP)--then exchange rate changes have little effect on the destination market import prices, which leads to low exchange rate pass-through. On the other hand, if exports are invoiced in the currency of the exporters—referred to as producer-currency pricing (PCP)--then exchange rate changes have a greater effect on prices in the importing nation, leading to higher pass-through. It has been argued that if exporters set their prices in the currency of the country that has the more stable monetary policy (i.e., local currency pricing as opposed to producer currency pricing), then exchange rate pass-through into import prices in local currency terms will be correspondingly low (Devereux and Engel, 2001).

So there are clearly many determinants of exchange rate pass-through. In an important paper, Campa and Goldberg (2005) test the significance of changes in macroeconomic variables and the extent of exchange rate pass-through into aggregate import prices for 25 industrial nations for the period 1975-1999. The authors find that macroeconomic factors such as lower the average rate of inflation and the less variable is the exchange rate the lower is the corresponding extent of exchange rate pass-through. However, these macroeconomic factors play a minor role in explaining the low exchange rate pass-through compared to the changing composition of a nation's imports away from raw materials and energy imports towards manufactured imports. Manufactured goods which tend to be characterized as being more competitive industries may be behind the low and declining rates of exchange rate pass-through.

Another factor that may have affected the extent of pass-through is cross-border “production fragmentation,” which refers to the dispersion of the production process among different countries. A country may be exporting the final product but at the same time importing the corresponding parts and components from another nation. A depreciation of the exporting nation’s currency makes the imported components more expensive. As such, an exchange rate change affects the exporter’s costs, which leads the exporting firm to raise its prices and subsequently pass through less of the exchange rate changes. Moreover, with dispersion of production processes, often more than one nation supplies parts and components, thereby increasing competition and lowering exchange rate pass-through (Ghosh and Rajan, 2006).

### **Policy Relevance**

The low exchange rate pass-through in the U.S. may explain the persistence of the U.S. trade deficit despite secular declines in the U.S. dollar. Conversely, low exchange rate pass-through implies that economies may be less concerned about the potential inflationary consequences of exchange rate fluctuations. While the extent of exchange rate pass-through has important macroeconomic implications, it is predominantly a microeconomic phenomenon and depends significantly on the types of goods being traded.

*See also: Expenditure switching, New Open Economy Macroeconomics, Nominal exchange rate, Plaza Accord, Production fragmentation, Real exchange rate*

### **Further Reading**

Campa, J.M. and Goldberg, L.S. 2005. "Exchange Rate Pass-through into Import Prices." *The Review of Economics and Statistics*, 87(4): 679-660. This widely cited paper tries to empirically determine the reasons behind the low and declining exchange rate pass-through.

Devereux, M. and Engel, C. 2001. "Endogenous Currency of Price Setting in a Dynamic Open Economy Model", *Working Paper No.8559*, NBER. Discusses how the currency invoicing affects exchange rate pass-through.

Ghosh, A. and Rajan, R.S. 2006. "Exchange Rate Pass-through in Asia: What does the Literature Tell us?", mimeo, George Mason University and Claremont Graduate University. A literature review on the determinants of exchange rate pass-through with particular reference to Asia.

Goldberg, P.K. and Knetter, M.M. 1997. "Goods Prices and Exchange Rates: What Have We Learned?" *Journal of Economic Literature* 35(3): 1243-72. A useful and much cited literature review on the exchange rate pass-through with particular reference to the U.S.

Knetter, M.M. 1993. "International comparisons of Pricing-to-Market Behavior." *American Economic Review* 83(3): 473-86. One of the earliest papers introducing the concept of pricing-to-market.

Taylor, J.B. 2000. "Low Inflation, Pass-through, and the Pricing Power of Firms," *European Economic Review*, 44(7): 1389-1408. The pioneering study linking stable monetary policy with the low and declining exchange rate pass-through in industrial countries.

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