

Discussion

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This is an interesting paper that explores a link between monetary policy, inflation, and exchange rate pass-through to consumer prices. The issues raised are important, because the relationship between nominal exchange rate fluctuations and consumer price movements has implications for monetary policy and exchange rate policy. In particular, if the association between nominal exchange rates and consumer prices is weak, the expenditure-shifting effects of monetary shocks are diminished. Furthermore, the classic case for exchange rate flexibility attributed to Friedman (1953) and Feldstein (1997) depends crucially on nominal exchange rate movements being passed through to consumer prices. They argue that exchange rates must be able to respond to shocks so as to generate relative price adjustments necessary for stabilizing the effects of those shocks on output. If, however, consumer prices are unresponsive to exchange rate fluctuations, this relative price adjustment will not occur, and these automatic stabilizing arguments for flexible exchange rates are no longer valid.

Devereux (2001), Devereux and Engel (2002, 2001), Engel (2000), and others make this point and examine optimal exchange rate policy in theoretical models with no immediate pass-through. Also, a better understanding of the connection between exchange rates and consumer prices provides insight into the factors that influence price determination. For example, it will allow us to better determine the relative importance of microeconomic factors such as market structure and macroeconomic factors such as inflation on the price-setting behaviour of manufacturers and retailers.

In this paper, Devereux and Yetman develop a model with nominal rigidities. This model provides a link between monetary policy and the

degree of exchange rate pass-through. The intuition behind this link is straightforward. Firms optimally choose how often to change prices in response to exogenous shocks. In making this choice, they consider the fixed cost associated with a price change and the losses associated with not changing their prices in times of inflation (which causes real prices to fall) and in response to nominal exchange rate movements (which affect their costs). Thus, tighter monetary policy, which lowers inflation, leads to smaller losses from holding prices constant and, therefore, is associated with lower degrees of pass-through. This is a significant contribution to the theoretical literature, since it provides an explicit connection between monetary policy and exchange rate pass-through in a tractable model with nominal rigidities.¹

The authors also provide empirical pass-through estimates for U.S. dollar exchange rates for a large set of countries using standard methods. They then use the country cross-sectional feature of their data to examine the relationship between inflation rates and their pass-through estimates. The results indicate a positive relationship between the level of inflation and the degree of pass-through.

These empirical findings are broadly consistent with evidence given by Choudhri and Hakura (2001), Gagnon and Ihrig (2001), and other cross-sectional studies. Related time-series evidence suggests that the relationship between exchange rate movements and core CPI in Canada weakened considerably in the relatively lower inflationary period of the 1990s (see, for example, Bank of Canada (2000)). Other authors, such as Campa and Goldberg (2002), Laffèche (1996–97), Goldfajn and Werlang (2000), and McCarthy (2000) have explored inflation and other determinants of pass-through such as the composition of imports. In addition, there is a large literature that explores the importance of market structure and industrial organization considerations for pass-through, and much of this work is surveyed by Goldberg and Knetter (1997). Kardasz and Stollery (2001) focus on Canadian industries in a recent example of this approach.

What is apparent from the literature is that the relationship between exchange rates and prices is complicated and the factors affecting the price-setting behaviour of retailers are varied and complex. With this in mind, I visited a number of local retailers in Kingston [Ontario] and inquired about their business with a focus on their price-setting decisions. My conversations with the owner of a long-established independent shoe store were particularly interesting. It became clear that many factors come into play

1. See, Taylor (2000) who examines links between monetary policy and pass-through of cost changes to prices.

when he sets his prices. Shoe prices in other markets such as Toronto and New York appeared to be important, as did the suggested retail price from the manufacturer. The retailer further emphasized that the nature of competition in the retail shoe industry had changed because of the exit of Canadian manufacturers and independent shoe retailers and the entry of chain stores. I was also left with the impression that the cost of changing his retail prices was not a significant component in his decision-making. My conversations with these retailers convinced me that the relationship between retailers, wholesalers, and manufacturers is complex, that it may have changed in recent years, and that “optimal” price-setting by these retailers is a complicated exercise.

I turn now to outstanding issues raised by this paper and related papers surrounding the relationship between exchange rates and the prices of goods. One issue concerns the stability of the relationship. In this paper, the relationship is stable but is a function of macroeconomic variables such as the inflation rate. It would be useful, however, to explore the possibility that changes in market structure, contract duration, energy prices, technology, and so on have caused a fundamental shift in the relationship. Closely related is the importance of sorting out the relative significance of microeconomic versus macroeconomic factors that affect these relationships.

This paper’s reliance on nominal rigidities in retail prices to generate low degrees of pass-through raises questions regarding the evidence on stickiness in retail prices. *Bils and Klenow (2002)* present data on the duration of consumer prices for a large set of goods. Their findings indicate frequent price changes with half of the prices in their sample lasting less than four months. These findings are important, especially since many of the measures of pass-through (including those in *Devereux and Yetman*) analyze annual data. Perhaps other sources of stickiness, such as wage stickiness and contracts between retailers and manufacturers, are important for explaining low levels of pass-through.

Nonetheless, it is difficult to deny the growing evidence suggesting a positive relationship between inflation rates and pass-through rates. Consequently, we might ask whether there is an alternative story that is consistent with this evidence that does not rely on retail price rigidities. A promising avenue is based on models of consumer search developed by *Benabou (1988, 1992)* and *Diamond (1993)*. *Head and Kumar (2002)* explore such a model to examine the relationship between inflation and the dispersion of consumer prices. In their environment, an increase in inflation has two effects on real prices. First, it raises consumers’ reservation prices, thereby increasing real prices. Second, it leads to more price dispersion,

increases the search intensity of consumers, and lowers real prices. When average inflation is low, the second effect dominates and, thus, monetary shocks are not fully passed through to nominal prices. In contrast, when average inflation is high, the first effect dominates and nominal prices rise by more than the money supply. Therefore, in this model, inflation and pass-through of monetary shocks are positively related. An interesting difference between this approach and the model of Devereux and Yetman is that in the latter, inflation reduces price dispersion, whereas in this environment, inflation increases price dispersion.

This paper, the related literature, conversations with retailers, and these outstanding issues have directed my thoughts to possible directions for future research. It is essential that researchers give increased attention to the microeconomic details surrounding exchange rate pass-through. A better understanding of price-setting behaviour will allow us to develop better measures of exchange rate pass-through that control for other factors affecting prices. We must also have measures of pass-through at higher levels of industry disaggregation and at various stages of production and distribution. We require a deeper understanding of relationships between manufacturers, importers, wholesalers, and retailers and insight into how those relationships may have changed. In exploring the link between policy and pass-through, we should consider the possibility that industries respond to shocks and changes in policy along margins of adjustment other than price movements. For example, entry and exit and industry restructuring in response to shocks may alter the relationship between exchange rates and prices.

References

- Bank of Canada. 2000. "Reduced Pass-Through into the Core CPI." *Monetary Policy Report* (November) Technical Box No. 2, p. 9.
- Benabou, R. 1988. "Search, Price Setting and Inflation." *Review of Economic Studies* 55 (3): 353–76.
- . 1992. "Inflation and Efficiency in Search Markets." *Review of Economic Studies* 59: 299–329.
- Bils, M. and P.J. Klenow. 2002. "Some Evidence on the Importance of Sticky Prices." NBER Working Paper No. W9069.
- Campa, J.M. and L.S. Goldberg. 2002. "Exchange Rate Pass-Through into Import Prices: A Macro or Micro Phenomenon?" NBER Working Paper No. 8934.

- Choudhri, E.U. and D.S. Hakura. 2001. "Exchange Rate Pass-Through to Domestic Prices: Does the Inflationary Environment Matter?" IMF Working Paper No. 01/194.
- Devereux, M.B. 2001. "Monetary Policy, Exchange Rate Flexibility, and Exchange Rate Pass-Through." In *Revisiting the Case for Flexible Exchange Rates*, 47–82. Proceedings of a conference held by the Bank of Canada, November 2000. Ottawa: Bank of Canada.
- Devereux, M.B. and C. Engel. 2001. "The Optimal Choice of Exchange-Rate Regime: Price-Setting Rules and Internationalized Production." In *Topics in Empirical International Economics: A Festschrift in Honor of Robert E. Lipsey*, edited by M. Blömstrom and L.S. Goldberg, 163–89. NBER and University of Chicago Press.
- . 2002. "Exchange Rate Pass-Through, Exchange Rate Volatility, and Exchange Rate Disconnect." *Journal of Monetary Economics* 49 (5): 913–40.
- Diamond, P.A. 1993. "Search, Sticky Prices, and Inflation." *Review of Economic Studies* 60: 53–68.
- Engel, C. 2000. "Local-Currency Pricing and the Choice of Exchange-Rate Regime." *European Economic Review* 44 (8): 1449–472.
- Feldstein, M. 1997. "The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability." *Journal of Economic Perspectives* 11 (4): 23–42.
- Friedman, M. 1953. "The Case for Flexible Exchange Rates." In *Essays in Positive Economics*, 157–203. Chicago: University of Chicago Press.
- Gagnon, J.E. and J. Ihrig. 2001. "Monetary Policy and Exchange Rate Pass-Through." The Federal Reserve Board International Finance Discussion Paper No. 704.
- Goldberg, P. and M. Knetter. 1997. "Goods Prices and Exchange Rates: What Have We Learned?" *Journal of Economic Literature* 35 (3): 1243–72.
- Goldfajn, I. and S.R.C. Werlang. 2000. "The Pass-through from Depreciation to Inflation: A Panel Study." Banco Central do Brasil Working Paper No. 5.
- Head, A. and A. Kumar. 2002. "Price Dispersion, Inflation, and Welfare." Queen's University. Manuscript.
- Kardasz, S.W. and K.R. Stollery. 2001. "Exchange Rate Pass-Through and Its Determinants in Canadian Manufacturing Industries." *Canadian Journal of Economics* 34 (3): 719–38.
- Lafèche, T. 1996–1997. "The Impact of Exchange Rate Movements on Consumer Prices." *Bank of Canada Review* (Winter): 21–32.

- McCarthy, J. 2000. "Pass-Through of Exchange Rates and Import Prices to Domestic Inflation in Some Industrialized Economies." Federal Reserve Bank of New York Staff Report No. 111.
- Taylor, J. 2000. "Low Inflation, Pass-Through, and the Pricing Power of Firms." *European Economic Review* 44 (7): 1389–408.