

Domestic and foreign influences on Canadian prices

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Abstract

The paper examines the pricing behaviour of 81 Canadian manufacturing industries from 1974 to 1996. It explores the circumstances in which Canadian prices respond to foreign (U.S.) influences, as opposed to domestic factors (i.e., labour, energy costs, and productivity growth). It finds that both forces exert important influences on Canadian prices. The responses differ across industries. Prices of domestically produced goods are more sensitive to their U.S. counterparts if the industry faces higher competitive pressure, either within the domestic market or from import competition, and if products are less differentiated. Crown Copyright © 2007 Published by Elsevier Inc. All rights reserved.

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1. Introduction

Trade liberalization has increased the degree of economic integration between Canada and the United States over the last 40 years. This suggests that the price formation process may now be influenced more than in the past by foreign competition. This paper therefore asks whether Canadian prices primarily follow the prices of competing U.S. products, or whether they are mainly determined by the domestic cost of production and productivity? The paper examines these questions by looking at the pricing behavior of 81 Canadian industries from 1974 to 1996.

Economic theory offers a host of explanations on price formation. Some models assume closed economies and propose a mark-up pricing rule. Here, industries base their selling prices on their unit costs and targeted rates of return (the mark-up). Others assume a perfectly competitive and integrated world, where prices are governed by the law of one price (LOP). Here, prices of a homogeneous product are set equal to world prices after adjusting for transport costs, the tariff rate and the exchange rate. In this paper, we seek to understand the relative importance of each rule in explaining the price-formation process in Canada. We also examine the circumstances under which Canadian prices are more responsive to foreign as opposed to domestic influences.

Understanding the price-formation process is important for inflation control. It also has different implications for analysts. If, for example, the LOP is a valid hypothesis, analysts would be justified in using the exchange rate to convert

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and compare inter-country real output. To the extent that the LOP does not hold, such practices lead to incorrect price estimates and cross-country comparisons of real GDP.

Kardasz and Stollery (1998, 2001) have examined the pricing behavior of Canadian producers under conditions of imperfect competition and product differentiation.¹ Based on a Cournot competition model and 33 Canadian manufacturing industries over the period 1972–1989, Kardasz and Stollery (1998) find that costs are the main determinants of domestic prices, and that the pass-through elasticities for costs increases with concentration ratio. Using the same dataset, Kardasz and Stollery (2001) find that the pass-through of exchange rate changes into the prices of domestically produced goods increases with export share, the elasticity of substitution between imports and domestic goods, and the domestic advertising intensity.

This paper extends the above Canadian studies in several aspects. First, this paper is different from Kardasz and Stollery (2001) in the sense that the focus is different. Kardasz and Stollery (2001) look at the pass-through of exchange rate to domestic prices; while we are more interested in how the prices of competing foreign products (valued in Canadian dollar) influence domestic prices. Second, in examining domestic influences, we use an integrated and consistent Canadian productivity dataset.² It provides longer time series (22 years) covering more detailed industries (81 industries). This database allows us to examine the influence of not only the cost of production, but also of productivity. Third, newly available macro- and micro-data provides us a rich set of measures over time on industry characteristics, such as product differentiation, domestic market competition and import competition. It allows us to investigate their influence on the sensitivity of Canadian prices to domestic and foreign (U.S.) influences. This overcomes data limitation of relying on 1 year's measures of industry characteristics.

Our empirical finding on the elasticity of Canadian prices to landed foreign (U.S.) prices and how the elasticity differs with respect to market and product characteristics contributes to the Law of One Price (LOP) literature. Most studies of LOP focus on the prices of commodities³ and then primarily on the pass-through of exchange-rate changes on import or export prices.⁴ In this paper, we move from examining individual commodity prices to investigating industry prices, since we are inherently interested in whether there are industry characteristics that may affect the influence of foreign prices on domestic prices. It is less common to find research that examines how the deviation from the LOP at the industry level is related to industry characteristics, such as the nature of domestic market competition, the extent of product differentiation, and the degree of trade orientation. The LOP hypothesis is implicitly based on the assumption that domestic and foreign goods are perfect substitutes and are traded in a perfectly competitive and integrated world markets. If industries differ with respect to whether their goods are perfect substitutes for goods produced in other countries, or in their intensity of competition, we might expect industry prices to vary in terms of their adherence to the LOP.

The layout of the paper is as follows. Section 2 outlines the empirical framework. Section 3 describes the data. Section 4 presents empirical results. And Section 5 concludes.

2. Empirical framework

Prices that satisfy the first-order conditions for profit maximization can be written as a mark-up of marginal cost:

$$P_{it} = C_{it}(W_{it}, A_{it}, Q_{it}(P_{it}, P_{it}^f, P_t, Y_t)) / [1 + 1/\eta_{it}] \quad (1)$$

where C_{it} is the marginal cost for industry i at time t , which is a function of a vector of variable input prices (W_{it}), productivity (A_{it}), and the level of output (Q_{it}). The demand for output (Q_{it}) is given by $Q_{it} = Q_{it}(P_{it}, P_{it}^f, P_t, Y_t)$, where P_{it} is the output price set by industry i , P_{it}^f is the average price of competing foreign products valued in domestic currency, P_t is the average price for all other domestic products outside industry i , and Y_t is domestic income level. Since the demand function Q_{it} is homogeneous of degree zero and the cost function C_{it} is homogeneous of degree one

¹ Other country studies include Feinberg (1989, 1996) for the U.S.; Feinberg (1986) for Germany; Bloch (1992), and Bloch and Olive (1999) for Australia; Feinberg (2000) for Colombia, Korea and Morocco, and Lee (1997) for Korea.

² This is the KLEMS dataset produced by the Micro Economic Analysis Division at Statistics Canada that generates labour and capital data that are consistent with the estimates of GDP (Baldwin & Gu, 2007).

³ See survey articles by Froot and Rogoff (1995) and Rogoff (1996).

⁴ See Menon (1995), and Goldberg and Knetter (1997) for a summary of articles on exchange-rate pass-through.

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