

Chapter 6

The Electronic Law of One Price (eLOP)

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ABSTRACT

The recent growth in the breadth of products sold in electronic commerce markets has created fertile grounds to investigate the Electronic Law of One Price (eLOP). Violations of this law are now more puzzling because many of the traditional frictions should no longer be relevant. This empirical study tests the eLOP by utilizing two datasets with online price data. Pairwise comparison tests reveal that the eLOP does not hold true for any of the product price categories tested.

INTRODUCTION

The Law of One Price (LOP) states that homogenous goods should sell for the same price in distinct markets. As such, the price of a commodity-like product in different countries should be identical after adjusting for the exchange rate. A significant amount of research has been conducted on the

LOP (Office, 1976; Froot and Rogoff, 1996). The research on the LOP is inconclusive since some scholars have found support for the theory (Baldwin and Yan, 2004) while others have not (Asplund and Friberg, 2001; Crucini and Shintani, 2008).

The rise of international electronic commerce (“e-commerce”) has created novel possibilities for investigating the LOP. Internet search engines and shopping bots allow consumers to easily locate accurate and timely information about products

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and prices. Retailers can use these techniques to keep informed about their competitors. E-tailing websites allow online sellers to change their prices very rapidly. Theoretically, the e-commerce environment is relatively close to the state of perfect competition. In fact, most products bought online may be quickly delivered to the customers regardless of their geographical location. Therefore, it may be assumed that, after adjusting for the exchange rate, prices of online products should be the same in different countries, as stated in the LOP.

Overall, the LOP has been the subject of extensive interest in brick-and-mortar markets. However, the LOP has not been formally defined and tested in the e-commerce environment. The purpose of this paper is to bridge this gap and test the LOP in the e-commerce sector. In the e-commerce environment, the LOP is referred to as the Electronic Law of One Price (eLOP).

BACKGROUND

This section first explores the origins of the LOP, as it evolved in brick-and-mortar markets, and then uses the original concepts and principles to develop the eLOP.

Origins of the Law of One Price

The LOP was first explored by the scholars of the Salamanca school in sixteenth century in Spain. In a departure from their theological roots, they applied natural philosophy to the economic problems of their inflation ridden era. Each nation experienced different rates of inflation which made it difficult to determine how to value foreign goods and currencies. The Napoleonic Wars triggered another phase of inflation which caused the LOP to be invoked, albeit ambiguously (Balassa, 1964). David Hume explored the effect of inflation on prices, and David Ricardo developed theories about the comparative advantage and the effect of

production costs on prices. Together, they clarified the core elements of the LOP.

During the 20th Century, the LOP came to prominence. Prior to the World War I, governments converted their currencies to gold at a fixed rate (Flandreau et. al. 1998). Since gold had a defined common value, the exchange rates were set by the value of gold. During the war, the gold standard was abandoned. Each nation experienced different rates of inflation (Cassel, 1916). After the war, the question of how to set exchange rates became a problem. Swedish economist Gustav Cassel wrote a number of articles in which he advocated the use of the LOP for setting exchange rates (Cassel, 1922). Readers are encouraged to review McKinnon (1979) for additional information on the origins of the LOP.

The LOP states that identical products should sell for the same price in different markets after adjusting for exchange rates. In other words, the same goods should have one price. The LOP can be expressed by the following equation:

$$P_i = EP_i^* \quad (1)$$

where, P_i is the domestic-currency price of good i ; P_i^* is the foreign-currency price of good i ; and E is the exchange rate between the two currencies (Rogoff, 1996). As such, under perfect market conditions (i.e., no market frictions, such as transaction costs or taxes, and the availability of perfect information), the price of the same product should be identical regardless of point of sale.

The LOP has become the focus of substantial controversy and the subject of a growing body of literature (Froot and Rogoff, 1996). Most studies in traditional markets have rejected the LOP (Ceglowski, 1994; Fuez, et al. 2008). The volatility and persistence of the deviations from the LOP is one of the most conspicuous empirical regularities in international finance (Froot, Kim and Rogoff, 2001). There are many factors that may partially explain these deviations. For example, distance between cities accounts for a significant amount

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