

# Exchange rate regimes and national price levels <sup>☆</sup>

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## Abstract

This paper explores the role of exchange rate regimes in explaining deviations from the classic theory of purchasing power parity. Examining a broad panel of countries, I find that developing countries with fixed exchange rate regimes have national price levels that are 20 percent higher than those with flexible regimes. For industrial countries, the relation between regimes and price levels is qualitatively similar but weaker. I investigate several explanations for this pattern, and find that exchange-rate overshooting in floats, inflation inertia in pegs and expansionary policies can explain only 5 percentage points of the observed differences. I also show that even though the observed pattern could be the outcome of a class of open economy models pioneered by Obstfeld and Rogoff, the data provides limited empirical support for the predictions of this model.

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## 1. Introduction

A fundamental question in international economics is how does the price of the same basket of goods compare across countries when denominated in the same currency? This question about purchasing power has given birth to the most influential theory of exchange rate determination. The purchasing power parity doctrine asserts that the exchange rate between two currencies is determined by the two countries' relative price levels, and therefore prices in a common currency should be identical across countries.

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It has long been recognized that absolute purchasing power parity (PPP) does not hold in practice. Departures from PPP were already recognized in the work of Ricardo, Keynes (1923) and Viner (1933). Qualifications to the theory took two forms: structural deviations from PPP related to lasting changes in equilibrium relative prices due to real factors (as in Harrod, 1939) or transitory departures that arise as a result of the differential speed in adjustment of asset and goods prices (as in Keynes, 1923).<sup>1</sup>

Despite the early theoretical work on disparities from PPP, it was not until the work of Balassa (1964) and Kravis and Lipsey (1983) that a systematic deviation from PPP was confirmed empirically. These authors found that real income per capita levels systematically influence relative prices across countries. Balassa suggested that real income differences capture differences in productivity across countries, while Kravis and Lipsey rely on different factor endowments to explain the systematic correlation.<sup>2</sup> Since then, the vast majority of empirical work related to PPP has focused on relative PPP, i.e., whether the price of the same basket of goods moves together over time across countries when expressed in a common currency.<sup>3</sup> Tests of relative PPP are typically easier to perform as they only require data on real exchange rate *indices* rather than actual cross-country price data.<sup>4</sup> Recently, Imbs et al. (2005) and Crucini and Shintani (2004) have used micro data to evaluate the differences in persistence of individual goods relative to aggregate indices. Despite the dominance of relative PPP studies, a number of empirical investigations have examined the extent of deviations from the law-of-one price using data on individual goods across cities in Europe and U.S. (e.g., Rogers, 2001; Goldberg and Verboven, 2005).

This paper explores the role of exchange rate regimes in explaining differences in the relative price of the same basket of goods across countries. Following Balassa (1964) and Kravis and Lipsey (1983), national price levels are used to measure the extent of deviations from absolute PPP. National price levels are defined as the ratio between two countries' relative price and their exchange rate. In particular, they are closely related to real exchange rates.<sup>5</sup> The paper uncovers a strong empirical relationship between national price levels and exchange rate regimes that has not been previously studied. Specifically, developing countries with fixed exchange rates have higher national price levels than those with flexible rates. Using Penn World Table data for low and middle income countries, those with hard pegged regimes have national price levels that are

<sup>1</sup> See Dornbusch (1988) and Rogoff (1996) for a more thorough discussion on departures from PPP. See Niehans (1990) for an explanation of Ricardo's view on international prices.

<sup>2</sup> Harrod (1939) was the first to suggest that productivity differences could explain systematic deviations from PPP. Balassa (1964) and Samuelson (1964) argue that high-income countries are associated with a larger productivity difference between tradable and non-tradable goods than low-income countries. Kravis and Lipsey (1983) and Bhagwati (1984) suggest that low-income countries have a higher labor intensity of non-tradable goods and relatively cheaper labor than rich countries. Both explanations imply a strong (positive) relation between national price levels and income levels.

<sup>3</sup> A notable exception is Clague (1986). He shows how other structural characteristics (like trade balance and tourism) influence national price levels. Bergstrand (1991) tries to distinguish between the Bhagwati (1984) and the Balassa (1964) explanation of why real per capita incomes and national price levels are correlated.

<sup>4</sup> As noted by Balassa (1964), even though Cassel's name has been associated with relative PPP he also formulated the absolute version. See Lopez et al. (2005) for a recent survey on relative PPP studies.

<sup>5</sup> National price levels and real exchange rates are related but distinct. In theory, national price levels and real exchange rates are identical if the shares in consumptions of goods are equal across countries. In practice, real exchange rates are computed using country-specific shares from government indices. By contrast, national price levels are computed using the same methodology across countries and actual price level data (see Section 2). This terminology is taken from the work by Kravis and Lipsey (1983), and continued by Heston and Summers (1991).

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