



## Purchasing power parity: Evidence from a transition economy

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### Abstract

Whether the purchasing power parity (PPP) theory of exchange rate determination holds for transition economies is an interesting question, given peculiar situations of transition economies. In this paper, we examine the real exchange rate for Croatia, a transition economy that has had some success in moving towards a market economy. Using a battery of tests that allow for a maximum of two structural breaks whose locations are determined endogenously from the data, we failed to find evidence supporting the validity of PPP for the Croatian economy. Thus, the conjecture that transition economies experiencing growth in productivity and real wages should experience real appreciation (thereby introducing doubt as to whether purchasing power parity holds) is substantiated by our results.

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## 1. Introduction

The purchasing power parity (PPP) theory of exchange rate determination states that exchange rates adjust to reflect domestic, and foreign price levels. Researchers typically test the validity of purchasing power parity by examining the stationarity of the real exchange rate. The real exchange rate,  $q_t$ , measures the deviation from purchasing power parity in the following equation:

$$q_t = s_t + p_t^f - p_t^d \quad (1)$$

where  $s_t$  is the logarithm of the nominal exchange rate,  $p_t^f$  the logarithm of the foreign price level, and  $p_t^d$  is the logarithm of the domestic price level. A finding that the real exchange rate follows a stationary process supports the purchasing power parity proposition. The empirical evidence on the purchasing power parity proposition is mixed; [Froot and Rogoff \(1995\)](#) and [Rogoff \(1996\)](#) provide in-depth survey of the literature.

Given the restrictive assumptions underlying purchasing power parity in conjunction with the transition process itself there is some doubt about whether purchasing power parity will hold for transition economies ([Brada, 1998](#)). For example, [Halpern and Wyplosz \(1997\)](#) suggest that equilibrium exchange rates should exhibit an upward trend as transition economies experience growth in productivity and real wages. They argue that, consequently, shocks to real exchange rates are largely permanent (stochastic) during the “catch-up” phase of transition. Additionally, [Desai \(1998\)](#) argues that the currencies are undervalued for many transition economies. In such cases, real appreciation of the currency is a likely response as currencies move towards the long run equilibrium rate (i.e., PPP rate). Moreover, [Brada \(1998\)](#) and [Orlowski \(1998\)](#) state that liberalization of the capital accounts of transition economies, thus inducing capital inflows, might appreciate the real exchange rate. Given the concerns over the behavior of the real exchange rate in transition economies, the empirical evidence is limited.<sup>1</sup>

The purpose of this paper is to extend the literature on the time series behavior of the real exchange rate for transition economies in two directions. First, we examine the real exchange rate for Croatia, a transition economy that has had some success in moving towards a market economy. Second, we employ a test that allows for a maximum of two structural breaks whose locations are determined endogenously from the data. Previous studies on the PPP of transition economies did not take into account of the effects of possible structural breaks. We use the minimum LM unit root tests of [Lee and Strazicich \(2003, 2004\)](#)—hereafter LS—to test for stationarity in the presence of possible structural breaks. The minimum LM tests may be fairly compared with the one-break minimum unit root test by [Zivot and Andrews \(1992\)](#) or the two-break minimum test by [Lumsdaine and Papell \(1997\)](#). These comparable tests, while commonly used in the literature, typically assume no breaks under the null. Although these minimum tests can be valid if the null hypothesis does not imply any break, their test statistics diverge when possible breaks exist under the null. This causes size distortions leading to frequent spurious rejections (see [Lee & Strazicich, 2001](#); [Nunes, Newbold & Kwan, 1997](#)). In many applications using these tests, the unit root null is often

<sup>1</sup> See [Thacker \(1995\)](#) for the case of Poland. [Kutan and Dibooglu \(1998\)](#) examine the case of Hungary.

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