



Purchasing power parity and the euro area

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Abstract

This paper analyzes purchasing power parity (PPP) for the euro area. We study the impact of the introduction of the euro in 1999 on the behavior of real exchange rates. We test the PPP hypothesis for a panel of real exchange rates within the euro area over the period 1973–2003. Our methodology exploits the cross-sectional dependence across real exchange rates and allows for heterogeneity in the rates of mean reversion. We present evidence in favor of PPP for the full panel of real exchange rates, but we show that accounting for cross-country differences within the euro area is essential. The unit root hypothesis can be rejected for some real exchange rates, but evidence for PPP is weak for others. We also investigate PPP between the “synthetic” euro against several other major currencies over the period 1979–2003. We find support for the PPP hypothesis for the full panel of real exchange rates. When the restriction of a common mean reversion coefficient is relaxed, we reject the unit root hypothesis for the euro-Swiss franc rate only. We conclude that the process of economic integration in Europe has accelerated convergence toward PPP within the euro area.

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1. Introduction

Economic integration within Europe has progressed rapidly over the past decades. The introduction of the euro in January 1999 constituted the culmination of

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the monetary integration process that effectively started with the establishment of the European Monetary System in 1979. These developments may have important implications for the behavior of real exchange rates, not only within Europe, but also between the euro area and other countries.

Although the depreciation of the euro against the dollar in the period 1999–2000 and the subsequent appreciation has attracted a lot of attention, both in the popular financial press and in academic research (see [Portes, 2001](#) for extensive discussion), remarkably few empirical studies examine the behavior of real exchange rates for the euro area. In particular, only a very limited number of academic papers study the hypothesis of purchasing power parity (PPP) for the euro.

There are at least three reasons why research on PPP within the euro area is interesting and relevant. First, PPP is one of the central theoretical concepts in international economics. The transition of the euro area countries toward a single currency forms a unique opportunity to test the hypothesis of PPP. Second, the convergence of price levels (and thus the behavior of real exchange rates) within the European Monetary Union (EMU) is an important issue for public policy makers. This is highlighted by a recent speech by European Central Bank President Wim Duisenberg on concerns about divergent price developments among euro area countries.¹ Third, studying PPP in the euro area is also interesting from the perspective of asset pricing and portfolio management. While nominal exchange rate risk has disappeared within the euro area in 1999, differences in inflation may entail non-trivial real exchange rate risk. The finding that real exchange rates within the euro area still exhibit considerable variation would have important implications for financial markets and asset managers.

In addition to the question whether PPP holds within the euro area, we are also interested in analyzing the behavior of the euro versus other major currencies, including the dollar, the pound, and the yen. As the economies in the euro area gradually converge, the euro area can increasingly be regarded as a single economic entity. Before the introduction of the euro, several studies (e.g. [Pollard, 1998](#); [Portes and Rey, 1998](#)) suggested that the euro would rival the dollar as a major international currency. Recent evidence presented by the [Bank for International Settlements \(2003\)](#) suggests that the role of the euro in international financial markets is growing. This calls for an extensive investigation of PPP between the euro area as a separate economic entity versus other major industrialized economies.

We are aware of only two studies that directly examine PPP within the euro area or for the euro versus other currencies.² [Lopez and Papell \(2003\)](#) study the convergence to PPP in the euro area over the period 1973–2001. Their study involves

¹ See W.F. Duisenberg, “Are different price developments in the euro area a cause for concern?,” speech delivered at the 2000 meetings of the Financial Services Industry Association in Dublin (available at <http://www.ecb.int>). We also refer to [European Central Bank \(1999\)](#).

² A number of related papers do not explicitly test for PPP. [Rogers \(2001\)](#) and [Lutz \(2002\)](#) investigate price level convergence within the euro area using European city price data and a data set consisting of a number of final goods prices, respectively. [Clostermann and Schnatz \(2000\)](#) analyze the determinants of the euro-dollar exchange rate without separately considering PPP.

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