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*New Evidence on Real Exchange Rate Stationarity and Purchasing Power Parity in Less Developed Countries**

This study tests for relative purchasing power parity among a sample of thirty less developed countries. For this purpose, a new test advocated by Im, Pesaran and Shin is employed which allows one to test for unit roots in heterogeneous panel datasets. The stationarity of at least one real exchange rate is identified where the average ADF statistic based on demeaned real exchange rate data is significantly different from zero. Using quarterly data covering the period 1973–99, this study finds evidence against purchasing power parity for most less developed countries. This conclusion is also drawn from panels based on region and inflationary experience as well as the application of a panel approach based on seemingly unrelated regression analysis.

1. Introduction

Purchasing power parity (PPP) is one of the most widely tested economic hypotheses. The argument that prices in different countries move toward equality in common currency terms is of potential interest to policy makers in less developed countries (LDCs) for at least two reasons. First, PPP becomes a prediction model for exchange rates and a criterion for judging over- and undervaluation of currencies. This may be particularly relevant for small open LDCs and those experiencing large inflation differentials between domestic and foreign inflation rates. Second, many exchange rate theories employ some notion of PPP in their construction. Thus, the quality of policy advice, insofar as it is based on these theories, may depend on the validity of PPP (Liu and Burkett 1995). Evidence on PPP for LDCs has led to mixed conclusions regarding its validity (see, *inter alia,* McNown and Wallace 1989; Liu 1992; Bahmani-Oskooee 1993; Mahdavi and Zhou 1994).[1]

*I am grateful for the helpful suggestions made by two anonymous referees, research assistance from Kate Morrison and computational assistance from Myles Wallace. Any remaining errors are my own.

[1]Studies on PPP for developed countries have generally provided ambiguous results without a conclusive answer, for example Balassa (1964) and Hakkio (1984) find in favor of PPP while Dornbusch (1980) and Frenkel (1981) find no evidence in favor of PPP. However, Frenkel (1978) suggests that PPP holds during periods of high inflation.

0164-0704/2001/$1.50

However, a view emerges that evidence in favor of PPP is stronger among the high inflation LDCs. This study tests for relative PPP in thirty LDCs using quarterly data for the period 1973:*ii*–99:*i*. For this purpose, a new methodology is employed, based on Im, Pesaran and Shin (1997), that tests whether or not the average augmented Dickey-Fuller (ADF) statistic based on a heterogeneous panel of real exchange rates with respect to the U.S. dollar is significantly different from zero or not. Using this t-bar test, there is evidence that at least one real exchange rate is stationary if the null of joint non-stationarity of LDC real exchange rates is rejected.

The recent studies of PPP in LDCs have utilized ADF tests for unit roots in real exchange rates and cointegration between various measures of domestic prices and exchange rate-adjusted foreign prices. McNown and Wallace (1989) test for unit roots in U.S. dollar real exchange rates and they employ the Engle-Granger (1987) OLS test for cointegration. Using data on consumer and wholesale prices for the 1970s and 1980s, evidence to support PPP is found in the cases of Argentina, Brazil, Chile and Israel. Bahmani-Oskooee (1993) uses quarterly data on prices and effective exchange rates for twenty five LDCs for the period 1973–88. Using the same Engle-Granger technique, evidence in favor of PPP among major trading partners is confirmed in only a minority of cases with little evidence to suggest that PPP is more likely in high inflation countries. This finding is supported by Bahmani-Oskooee (1995) who generally rejects stationarity of the real effective exchange rate across a sample of twenty two LDCs. Liu (1992) tests for PPP in a sample of ten Latin American economies using quarterly data from the 1940s and 1950s to 1989. Applying the Johansen (1988) maximum likelihood technique for estimating cointegrating vectors, Liu finds general evidence in favor of PPP with respect to the U.S. Finally, Mahdavi and Zhou (1994) apply the Johansen technique to investigate PPP in a sample of LDCs using quarterly data for 1973:*ii* onwards. They conclude that incidences of PPP are more frequently observed among high inflation countries.[2]

The case for utilizing a panel data unit test to investigate PPP is that these early tests for cointegration are based on low power against stationary alternatives. The key reason of interest attached to this particular study is that a new test based on heterogeneous panels is applied in the search for PPP. Levin and Lin (1993) provide an existing panel data unit root test. They allow for individual specific effects and dynamic heterogeneity across the data series but the autoregressive parameter is constrained to be the same

[2]Further evidence on PPP in LDCs based on tests for unit roots and cointegration can be found in Conejo and Shields (1993) and Hoque (1995). While the latter study rejects PPP, Conejo and Shields find evidence in favor of PPP with respect to the U.S. in the cases of Brazil and Mexico.