Post Bretton Woods deviations from purchasing power parity in G7 exchange rates—an empirical exploration

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Exchange rates have deviated substantially and idiosyncratically from purchasing power parity (PPP) since the breakdown of Bretton Woods. In this paper, a model incorporating both traditional PPP and financial market variables is constructed and tested on the US dollar’s six G7 exchange rates during the floating rate era. Empirical tests show that the model’s common set of variables—with consistent signs—can explain the divergent behavior of G7 exchange rates during 1973.2–90.2. Idiosyncrasies are reflected in different subsets of the model’s variables entering significantly into each exchange rate’s regression; the existence of stable relationships is demonstrated by the equations’ co-integration. (JEL F3, F4). Copyright © 1996 Elsevier Science Ltd

Since the demise of the Bretton Woods fixed exchange rate system, deviations of market exchange rates from purchasing power parity (PPP) have been substantial and sustained; see Frenkel (1981), Hakkio (1984) and Huang (1990). These deviations from PPP also have been quite diverse among the G7, as shown in Figure 1: from the onset of general floating in March 1973 to the eve of German reunification in mid-1990, the lira was, until near the end of the period, persistently undervalued against the dollar. The yen’s fluctuations and general overvaluation contrast strongly with the pound’s relative undervaluation. The mark and the franc shadow each other but diverge widely from PPP. Only the Canadian dollar meanders narrowly around PPP, especially after 1978. The one interval of agreement among these currencies—excluding the Canadian dollar—is during the early to mid-1980s when the dollar was strongly overvalued relative to PPP against each of the other five. The dollar’s overvalu-

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Post Bretton Woods deviations from purchasing power parity in G7 exchange rates: M Ott

In dollar price of currency less In PPP

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CAdollar — FRfranc — GEmark — ITlira — JYen — UKpound

FIGURE 1. Deviations from PPP by G7 dollar exchange rates—from onset of general floating until German unification

ation steadily widened during this interval, peaked in early 1985, and then rapidly reversed to undervaluation, except versus the pound.

Because of these persistent and diverse deviations from PPP, the overvaluation of the dollar, and the huge trade deficits in the 1980s, many analysts viewed exchange rates as perverse. In fact, Mundell’s aptly titled survey, ‘Do Exchange Rates Work?’, captures the perplexed mood of those who viewed exchange rates as simply clearing trade in goods and services without considering capital flows.1 Others turned away from trade-flow view of exchange rate determination, arguing alternatively that while exchange rates do clear the markets for goods and services, the size and direction of the current account balance is determined by comparative international investment opportunities.2

These contrasts exaggerate the extent to which these two approaches are competitive rather than complementary.3 The alternative approach explains the level of capital flows induced by shifts in policy regimes and investment demands, while the traditional trade flow approach asserts the static equilibrium PPP value of the exchange rate in the absence of disturbances. Thus, there are possibilities for combining the two approaches and exploiting their complementarities.

In this paper a model melding both approaches is constructed and tested. The tests apply the econometrics of co-integration to quarterly data for the US dollar’s six G7 exchange rates, their deviations from PPP and other financial and real variables, 1976.1–90.2. Significant support is found for the model and co-integration in these tests except for the Canadian dollar. In contrast, to
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