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Purchasing Power Parity as a Trading Strategy: Discussion

Author(s): Bradford Cornell

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DISCUSSION

BRADFORD CORNELL*: John Bilson has written a provocative paper. By applying procedures developed in finance, he provides new insight into the role of purchasing power parity as a determinant of exchange rates.

Exchange rate returns (percentage changes in the dollar price of foreign exchange), like stock returns are very noisy. The problem can be summarized by writing the simple model,

$$R_t = B_t + u_t, \quad (1)$$

where,

R_t = the period t return,

B_t = the equilibrium return (which can be thought of as the return expected as of $t - 1$ plus a risk premium), and

u_t = the random deviation from the equilibrium return.

For both stock and foreign exchange, $E(B^2) \ll \text{Var}(u)$, even for observations intervals of a month or more. This is true for all reasonable models of the equilibrium return, B . Under these circumstances, regressions of the form,

$$R_t = a_0 + a_1 X_{1,t-1} \cdots \cdots a_n X_{n,t-1} + v_t, \quad (2)$$

are certain to have little explanatory power no matter how the X 's are defined. For this reason financial economists rarely use regressions like (2) to study stock returns.

Nonetheless, traditional tests of PPP, and to a lesser extent forward rate parity, have been based on regressions similar to those given by (2). The poor fits that result are then interpreted to be evidence of the failure of PPP. Bilson argues that this conclusion is unwarranted. He notes that rejecting PPP on the basis of models like (2) is similar to concluding that there are no systematic factors which affect stock returns because they are difficult to discover from time series regressions for individual equities.

An alternative approach is to develop a trading strategy based on the information contained in the forward premium or the PPP relation. In this context

*University of California, Los Angeles

the value of the information is measured by the risk-return trade-off produced by the strategy. This is the approach used by Bilson. He fails, however, to stress an important caveat. If the information provided by PPP is accurately reflected in the market price (the forward rate or interest rate differential) then trading strategies which attempt to make use of this information should do no better than buy and hold.

Bilson finds that his trading strategy is profitable. The ratio of the mean profit to the standard deviation of profit is superior to that for the Standard and Poor's 500. Furthermore, Bilson finds that a regression of the actual profit on the profit predicted by his model has a R^2 of 0.74. In light of these results Bilson concludes that his approach provides a new perspective on PPP.

From a more general standpoint, however, Bilson's results are "too good." The large profits he reports bear directly on questions related to market efficiency and the existence of risk premiums in the markets for foreign exchange. It is possible, of course, that the profits are produced exclusively by in sample bias, but this interpretation is not consistent with the earlier work of Bilson and Hsieh [1]. In that paper the authors develop a similar trading strategy and apply it to out of sample data. They find that the profits decline slightly, but remain significant. These results are consistent with recent papers by Hansen and Hodrick [3] and Hodrick and Srivastava [4] which also report profitable foreign exchange trading rules.

If Bilson's profit represents a risk premium, then its source is yet to be clearly understood. It is apparently not due to "market risk." Bilson and Hsieh report that the correlation between the profits produced by their trading strategy and the return on the S&P 500 is close to zero. In this regard, application of the arbitrage pricing model to foreign appears promising. Chen, Roll and Ross [2] find that several economic variables, such as unexpected inflation and innovations in interest rates, are priced factors. It is possible that Bilson's profits represent risk premiums with respect to these factors. Hopefully future research will provide an answer.

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