Ex ante Real Returns in Forward Market Speculation in the Inter-War Period: Evidence and Prediction*

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Summary. The Keynes-Einzig conjecture states that discrepancies between interest parities and forward rates in the interwar period did not cause deliberate transfers through interest arbitrage on a large scale unless and until the profit on the operation was at least $1/2$ percent per anum. We further examine this conjecture by employing monthly data for six currencies against the US Dollar for the period 1921-1936. In particular, we analyse the *ex ante* real returns to uncovered forward speculation in the interwar period. We find that excess returns were predictable and that deviations from covered interest parity (CIP) were large and systematic. Evidence of nonlinear adjustment of CIP is also provided.

1 Introduction

A number of authors have investigated the properties of spot and forward exchange rates in the inter-war floating period (e.g. Hansen and Hodrick [14]; Taylor and McMahon [28]; Fraser and Taylor [13]; Baillie et al. [1]; and Byers and Peel [2]).This empirical work suggests that, as is consistent with analysis of post-war data (e.g. Fama [10]), the forward exchange rate is a biased and inefficient predictor of future exchange rates. As a consequence there are to be, at least ex-post, predictable non-zero returns to speculation. However as is now well recognised if agents are risk-averse rather than risk neutral, then speculative returns should be non-zero reflecting the required risk premium (see e.g. Hodrick and Srivastava [15]). Whilst predictable non-zero returns to speculation may be a consequence of risk premia it is also of course possible that they reflect inefficiency of expectations formation. This type of explanation is given weight by those who regard the results of the analysis of directly observed survey data on expectation formation as relevant. This work uniformly points to bias and inefficiency in expectation formation (see e.g. Frankel and Froot [11]; MacDonald and Torrance [21]; MacDonald [20]; Cavaglia et al. [3]).

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Another possible explanation of nonzero speculative returns in the inter war period is the failure of covered interest arbitrage to hold. In the *Tract on Monetary Reform*, Keynes conjectured that deviations from covered interest rate parity would not be arbitraged unless a profit of at least a half of one percent on an annualised basis was available, and that larger deviations would still be moderately persistent because of the less than perfect elasticity of supply of arbitrage funds. This two-part conjecture was given further emphasis by other writers on this period, notably Einzig [6]. The following three quotations illustrate their thoughts on this issue:

1. "It may be said, therefore, that discrepancies between Interest Parities and forward rates do not cause deliberate transfers through interest arbitrage on a large scale unless and until the profit on the operation is at least $1/2$ per cent per annum. This has been recognised by Mr. Keynes and by other writers, but is often overlooked by those who are not in contact with the market." Einzig [6], pp. 172-173.
2. "It must be remembered that the floating capital normally available, and ready to move from centre to centre for the purpose of taking advantage of moderate arbitrage profits between spot and forward exchange, is by no means unlimited in amount, and is not always adequate to the market's requirements..... [An] abnormal discount can only disappear when the high profit of arbitrage between spot and forward has drawn fresh capital into the arbitrage business." Keynes [17], pp. 107-8.
3. "So few persons understand even the elements of the theory of the forward exchanges that there was an occasion in 1920, even between London and New York, when a seller of spot dollars could earn at the rate of 6 per cent per annum above the London rate for short money." Keynes [17], p. 108.

The first two statements about the functioning of the exchange market during the inter-war period are known as the "Keynes-Einzig" conjecture. In a recent paper, Peel and Taylor [25] apply non-linear econometric techniques to a previously unexplored weekly data base for the period 1921-1923 for the London and New York markets. They find strong support for the conjecture of Keynes and Einzig that there were systematic deviations from covered interest arbitrage.
The purpose in this paper is to examine further the conjecture of Keynes and Einzig employing monthly data for six countries over the period 1921-1936. The monthly interest rate data for this period we have access to is taken from Einzig [6] and consists of weekly averages. Consequently the returns from covered interest arbitrage *per se* cannot be computed since, as it is now well known, it is important to measure deviations employing data recorded at the same instant in time at which a dealer could have dealt (see e.g. Sarno and Taylor [27]). Nevertheless analysis of the time series properties of this data (see Appendix 1) are consistent with the Keynes-Einzig conjecture. Naturally if there were systematic deviations from covered interest arbitrage during the inter war period the same will be true of uncovered arbitrage, *a fortiori*. Consequently, we analyse the *ex ante* real returns to uncovered forward