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Hedgers, speculators and forward markets: Evidence from currency markets

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Abstract

Since Keynes [Keynes, J.M., 1930. A Treatise on Money, vol. II. Macmillan, London.] and Hicks [Hicks, J.R., 1939. Value and Capital. Oxford University Press, Cambridge.] propounded their theory of normal backwardation, the issue of whether hedgers must pay speculators an insurance premium has remained controversial. Recent theoretical developments incorporating the existence of market imperfections have validated the existence of an insurance premium charged to hedgers by speculators. Owing to differences in data sets and econometric methods, a consensus has not yet been reached. Drawing inspiration from asset pricing theory a model of currency returns is used, similar to that in Mark [Mark, N.C., 1988. Time-varying beta and risk premia in the pricing of forward foreign exchange contracts. Journal of Financial Economics 22, 335–354.] and the importance of speculative influences is tested. The purpose of the paper is to highlight the theoretical and statistical deficiencies of the extant literature and to examine the robustness of previous empirical results to changes in specification. Applications to risk management and forecasting are immediate, as knowledge of any insurance premium is crucial in formulating an optimal hedging strategy and an optimal forecasting model.

Keywords: Speculators; Normal backwardation; Foreign exchange risk; Hedgers; Insurance premium

1. Introduction

Market imperfections are a major concern in the protection and rehabilitation of the natural environment and the development of new technologies that have the potential to deliver this (Chan et al., 2005; Marinova and McAleer, 2003). The volatility of financial markets in particular is associated with risks and risk management is a significant consideration for investors, and hence an important area of modelling. This paper explores specifically the topic related to insurance premium. The issue of whether futures prices exhibit a bias that compensates speculators for risk dates back to Keynes (1930) and Hicks (1939). They purported that because speculators provide hedgers with the ability to manage risk, they charge a premium for their services. In contrast, modern portfolio theory asserts that in perfect, frictionless markets, only risks that investors cannot diversify will entitle them to earn a premium for bearing risk. However, recent theoretical work that incorporates imperfections such as trading costs and non-marketable positions, allows risk arising from hedging pressure to co-exist with traditional sources of systematic risk, such as market risk – see Hirshleifer (1990) for example.

The question is important for numerous reasons. If premia exist within prices, agents looking to forward prices to form expectations must incorporate premiums into their analysis. In formulating hedging strategies, optimal hedging strategies may depend upon the size of any extant premium. Moreover, an overwhelming body of literature has documented the seemingly biased

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nature of the forward rate as a predictor of future spot returns. The presence of time-varying risk premia in exchange rate markets has been suggested as a possible source of this bias.[1] Therefore, it is not surprising that a great deal of research on the existence of futures premia has been conducted. Despite this though, no consensus appears in sight. The work of Carter et al. (1983), Chang (1985) and Bessembinder (1992) seems to support the notion that speculators can charge hedgers a premium for bearing the risks that they are trying to offset. Kolb (1992) and Chatrath et al. (1997) provide conflicting evidence. One reason we may never be certain about whether a speculative premium exists because it is consistent with other reasons, such as superior forecasting ability on the part of agents. These studies analyse simply futures returns, thus whether speculators influence spot and forward market returns remain to be seen.

A recent paper by de Roon et al. (2000) proposes a novel idea whereby not only the particular commodity's speculators charge a premium, but those in like asset classes also contribute to the extent of hedging pressure. They also find that the hedging pressure variables affect the underlying asset. However, the results are not completely satisfactory. They measure market returns by the S&P 500. While the market index will never be completely observable, it seems that a more reliable and relevant measure could be obtained by inserting world equity returns, as measured by the Morgan Stanley Capital Index (MSCI). We address this concern in this paper.

2. Empirical specification

Under risk-neutrality, the standard no-arbitrage assumption dictates that forward rates should be an unbiased predictor of future spot exchange rates such that:

$$S_{t+1} = F_t^{t+1} + \varepsilon_{t+1} \tag{1}$$

where ε is a zero-mean, serially uncorrelated process.

If a risk premium exists, this relationship must be extended to include the premium, ρ:

$$S_{t+1} = F_t^{t+1} + \rho_t + \varepsilon_{t+1} \tag{2}$$

Following Mark (1988), we analyse what are notionally called forward returns, that is the log difference between the realised spot rates and forward rates $S_t - F_t^{t+1}$.[2] The original hypothesis proposed by Keynes was couched in terms of forward rates and realised spot rates, so this appears to be a more relevant test of the theory than merely analysing futures returns as in Bessembinder (1992) and de Roon et al. (2000). The model above does not stipulate what sources the premia are derived from. Following the theoretical research of Hirshleifer (1990), and empirical papers such as Mark (1988), we include world equity returns and net currency speculators, scaled by the amount of open interest. Therefore, the model is:

$$\left(S_t - F_{t-1}^{t}\right) = \alpha + \beta \mathrm{XSR}_t + \sum_{i=1}^{5} \gamma_i \mathrm{SPECOI}_{i,t-1} + \varepsilon_t \tag{3}$$

where $\mathrm{XSR}_t = [(\mathrm{MSCI}_t - \mathrm{MSCI}_{t-1})/\mathrm{MSCI}_{t-1}] - r^{\mathrm{US}}$, SPECOI = (longspec − shortspec)/open interest and ε is a zero-mean, serially uncorrelated process.

3. Data

In measuring forward rates we constructed the theoretical forward rate under covered interest parity. The data were obtained from Datastream and sampled on a monthly basis to avoid the complications of overlapping observations. World excess returns are measured as the monthly returns on the MSCI index in excess of the U.S. dollar (USD) interest rate. Speculation is measured as the difference between the long and short speculators as reported in the Commodity Futures Trading Commission's (CFTC) Commitment of Traders reports. The CFTC requires that large traders disclose their purpose for trading futures and is the most common way of gauging speculative interest applied in the literature. The net amount is scaled by total open interest to account for possible patterns in the amount of futures being traded. The sample spans September 1992–October 2002 for 130 observations.

Tables 1 and 2 present summary statistics of the variables used in the regression analysis along with Augmented Dickey–Fuller (ADF) tests to establish whether the data display non-stationary behaviour. Consistent with prior studies, the ADF rejects the null hypothesis of a unit root in returns at the one percent significance level. Furthermore, the measure of speculation is also seen to be stationary. This suggests that ordinary least squares (OLS) methods are acceptable procedures to estimate the model.

Over the period speculators tended to be negative across all currencies, perhaps reflecting the fact that the USD appreciated considerably over the period as it has become the store of value for central banks and the unit of account in which global commerce is conducted. Speculators appear to be most volatile in the Australian dollar when compared to the mean amount of contracts, perhaps reflecting that the Australian dollar is often viewed as being a vehicle for speculation.

[1] For a review of this literature see Engel (1996).

[2] The term, 'return' is not strictly true as no capital is invested in entering a forward contract.