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Do analysts' forecasts of term spread differential help predict directional change in exchange rates?

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ABSTRACT

We show that Blue Chip analysts' forecasts of US-Australia and US-UK exchange rates cannot accurately predict directional change in these exchange rates. The literature suggests that the cross-country term spread differential contains useful information for predicting exchange rates. We show that the difference between analysts' and random walk forecasts of the US-Australia (US-UK) term spread differential has directional predictability for the US-Australia (US-UK) exchange rate for 1997–2007 but not for 2008–2015. For the former period, the predictions generally imply symmetric loss, meaning that they are of value to a user who assigns similar loss to both incorrect upward and downward moves.

1. Introduction

Beginning with Meese and Rogoff (1983), numerous studies have proposed different models to characterize exchange rate behavior. While successful in explaining the in-sample exchange rate movements, these models have generally failed to consistently beat a simple random walk model in out-of-sample forecasting. Similarly, beginning with Frankel and Froot (1987), various studies have shown that survey-based forecasts of exchange rates cannot generally outperform the random walk benchmark.

Several studies, including Chung and Hong (2007) and Tsuchiya and Suehara (2015), point out that it may be easier to accurately predict the direction of change in exchange rates than the actual rates. This is noteworthy since directional predictions are important for a number of reasons, as discussed by Chung and Hong (2007) First, in maintaining monetary stability, central banks with pegged exchange rate systems often rely on directional predictions to decide whether to intervene in the foreign exchange market. Second, directional predictions of exchange rates are the basis for technical trading rules used by foreign exchange dealers. Third, compared to such common forecast evaluation criteria as the mean squared error, using the direction-of-change criterion is more appropriate when choosing among forecasts in terms of their ability to maximize expected economic profits (Leitch & Tanner, 1991). Fourth, directional predictability of asset returns, in general, is important for market timing as a form of active asset allocation management.

Motivated by such considerations, this study focuses on predicting the direction of change in US-Australia and US-UK exchange rates by utilizing Blue Chip forecasts derived from an international panel of financial analysts. Unlike a "no-change" random walk forecast, Blue Chip analysts' forecasts of exchange rates predict directional change. However, as we shall see, these directional predictions are not accurate.

In addition to the exchange rate forecasts, Blue Chip reports analysts' forecasts of short- and long-term interest rates for each country. This allows us to investigate whether the Blue Chip analysts' forecasts of the cross-country term spread differential can help predict the direction of change in the exchange rates. More specifically, Chen and Tsang (2013) conclude that "the difference between two countries' yield curves can predict the relative value of their currencies and risk premiums." The cross-country term

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spread differential can be written as the long-term interest rate differential ($R_t - R_t^*$) minus the short-term interest rate differential ($r_t - r_t^*$); where R_t (R_t^*) is the home (foreign) country long-term interest rate, and r_t (r_t^*) is the home (foreign) country short-term interest rate. In line with Mishkin (1990) and the expectations hypothesis, a widening relative gap at the longer end of the yield curve (i.e., $R_t - R_t^*$) reflects higher expected domestic inflation and thus leads to domestic currency depreciation in the long-run. Alternatively, a relative rise in the term spread may reflect an improving domestic economic outlook which reduces the risk premium and thus leads to the appreciation of domestic currency in the future. As noted by Ahmed and Straetmans (2015), "Depending on which effect (inflation or risk premium) is dominant, an increase in the relative term spread may have either an appreciating or depreciating impact on the domestic currency." In particular, a positive (negative) association between the expected change in the exchange rate and cross-country term spread differential point to inflation (risk premium) as the dominant force in determining future movements of the exchange rate.

To keep it simple, we focus on the US and UK data (but note that the following discussion holds also for the US and Australia data). We utilize Blue Chip survey (consensus) forecasts of US and UK short- and long-term interest rates to construct the analysts' forecast of the US-UK term spread differential (FD^K_{t+f}, where f is the forecast horizon). We also utilize the data on US and UK short- and long-term interest rates most recently known at the time of the survey to construct the corresponding random walk forecast of the US-UK term spread differential ($RD^K{}_t$). Therefore, we have two sets of forecasts or expectations ($FD^K{}_{t+f}$ and $RD^K{}_t$), both formed in month t.[1] In line with Mishkin (1990) and Chen and Tsang (2013), we note that $RD^K{}_t$ captures the market-expectation of various economic "fundamentals" and thus can contain useful information in predicting the US-UK exchange rates. For instance, let A_{t+f} be the US-UK exchange rate in $t+f$ and Rw_t be the rate most recently known at the time of the survey. Then, the theory suggests that $RD^K{}_t$ (or $FD^K{}_{t+f}$) contains useful information for predicting the direction of change in the US-UK exchange rate ($A_{t+f} - Rw_t$). Inspection of the data indicates that ($A_{t+f} - Rw_t$) evenly fluctuates around the zero-mean, but both $RD^K{}_{t+f}$ and $FD^K{}_t$ stay mostly above the zero-line and, thus, are not useful in predicting the direction of change in the US-UK exchange rate. This is shown in Fig. 1 for ($A_{t+3} - Rw_t$), $FD^K{}_{t+3}$, and $RD^K{}_t$. Fig. 1 also includes the time plot of ($FD^K{}_{t+3} - RD^K{}_t$). As shown, this series fluctuates around the zero-mean and, thus, it can be useful for our investigation. We refer to ($FD^K{}_{t+f} - RD^K{}_t$) as the information content difference and ask whether it is useful for predicting the direction of change in the US-UK exchange rate ($A_{t+f} - Rw_t$). For reasons discussed later, a significant positive (or negative) association between ($A_{t+f} - Rw_t$) and ($FD^K{}_{t+f} - RD^K{}_t$) cannot help decide whether inflation or the risk premium is the dominant force in determining future movements of the exchange rate.

Our findings indicate that the information content difference associated with the US-Australia (US-UK) term spread differential can predict the direction of change in the US-Australia (US-UK) exchange rate for 1997–2007 but not for 2008–2015 which includes the recent financial crisis. Further findings for 1997–2007 indicate that the 3- and 6-month-ahead predictions imply symmetric loss, meaning that they are of value to a user who assigns similar loss to both incorrect upward and downward moves. The 12-month-ahead predictions imply asymmetric loss, meaning that they are of value to a user who assigns more (less) loss to incorrect upward (downward) moves. Such evidence is important, since practitioners often have strategic incentives or simply want to maximize expected trading profits (Cohen et al., 2015). For them, an optimal forecast may not necessarily involve a symmetric loss and, in fact under certain conditions, they prefer a forecast that is generated under an asymmetric loss function.

Put together, Blue Chip analysts' forecasts of US-Australia and US-UK exchange rates fail to accurately predict the direction of change in these exchange rates. However, for 1997–2007, the difference between analysts' and random walk forecasts of the US-Australia (US-UK) term spread differential has directional predictability for the US-Australia (US-UK) exchange rate. Therefore, the main implication of our findings is that for predicting the *direction of change* in exchange rates, it is important to utilize the information contained in the analysts' forecast of cross-country term spread differential that is not captured by the corresponding random walk forecast. We proceed by providing the related literature in Section 2. Section 3 discusses the data. Section 4 presents the empirical results. Section 5 concludes by discussing our findings.

2. Related literature

Research suggests that a country's term spread contains useful predictive information for that country's output growth. In particular, a widening term spread signals expansion and a narrowing term spread signals recession. One explanation often cited is that when expecting a recession, investors sell short-term bonds and instead buy long-term bonds. This action lowers the term spread, signaling the expected recession (Harvey, 1988). Wheelock and Wohar (2009) conduct an extensive review of the empirical studies and conclude in favor of the term spread as a predictor of output growth and recessions but note variations across countries and time. Other empirical studies (including Gerlach, 1997; Jorion & Mishkin, 1991; Mishkin, 1990), have shown that the term spread contains useful predictive information for inflation. Stock and Watson (2003) find that the predictive power of term spread for inflation also varies across countries and time.

Estrella (2005) notes that most empirical studies have offered informal or simple explanations for their findings. For instance, a simple model based on the Fisher equation has often been used to explain the predictive power of term spread for inflation. To narrow the gap in the literature, Estrella (2005) constructs a formal macroeconomic model in order to theoretically demonstrate why the term spread can be a good predictor of both output growth and inflation. To lessen the dependency of the results on a particular macroeconomic modelling view, he specifies a backward-looking version in line with simple dynamic IS-LM models, and a forward-looking version in line with the consumption capital asset pricing model and the real business cycle. Both versions further include

[1] An alternative way of writing the random walk forecast of the US-UK term spread differential is RD^K_{t+f} which, by definition, is equal to $RD^K{}_t$.