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What Is Wrong with Market-Based Forecasting of Exchange Rates?

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Abstract

Market-based forecasting of exchange rates is flawed because it is based on two hypotheses that are not supported by empirical evidence: the simple random walk hypothesis and the unbiased efficiency hypothesis. By using historical data on six currency combinations it is shown that these two hypotheses are rejected because of the presence of a significant time-varying drift factor and what is typically perceived as a risk premium. It is also shown that the model representing the unbiased efficiency hypothesis is misspecified because the relationship between the spot and forward exchange rates is contemporaneous rather than lagged. The results cast doubt on the usefulness of the spot and lagged forward rates as benchmarks for measuring the forecasting power of time series and structural models. It is also demonstrated that market-based forecasting may lead to faulty financial decisions.

Key words: market-based forecasting; random walk; unbiased efficiency; covered interest parity

JEL classification: F31; G15

1. Introduction

Market-based forecasting amounts to using the current spot and forward exchange rates to forecast the spot rate at some future point in time. It is called market-based forecasting because the forecasters (the spot and forward rates) are provided by the spot and forward foreign exchange markets. It is, therefore, free whereas the alternatives of subscribing to the services of a forecasting firm or generating forecasts internally from time series or structural models can be rather costly. The use of market-based forecasting is attributed to the cost factor and the frequent finding that elaborate econometric models cannot outperform the spot and forward rates (for example, Meese and Rogoff, 1983).

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Market-based forecasting rests on two hypotheses: the random walk hypothesis and the unbiased efficiency hypothesis. The random walk hypothesis tells us that period-to-period changes in the spot exchange rate are random and unpredictable. The spot exchange rate tomorrow is as likely to be above today's level as to be below it. Hence, the best forecast for tomorrow's exchange rate is today's rate. The unbiased efficiency hypothesis tells us that the current forward rate is an unbiased and efficient forecaster of the spot exchange rate prevailing on the maturity date of the forward contract. This is because the forward exchange rate supposedly reflects the market's expectation of the level of the spot rate in the future. The importance of these forecasters (the spot and forward exchange rates) is that they are used as benchmarks to evaluate the forecasting performance of exchange rate determination models. The question is always whether or not a particular model can outperform the random walk model or the forward rate (see, for example, Meese and Rogoff, 1983; Wolff, 1987). Furthermore, some measures of forecasting accuracy, such as Theil's inequality coefficient, are based on the same idea of using the spot and forward rates as benchmarks (see, for example, Moosa, 2000).

The objective of this paper is to argue that the pillars of market-based forecasting are assumptions that do not hold and models that are misspecified. This proposition is illustrated with the help of historical data on six exchange rates. It will be demonstrated that the two assumptions of zero drift and zero risk premium, which are essential for using the spot and forward rates as forecasters, are invalid and not supported by empirical evidence. In fact it will be shown that the coefficient restrictions in the underlying models are in general rejected. Moreover, some theoretical assumptions will be put forward against the unbiased efficiency hypothesis.

2. The Theoretical Models as Testable Hypotheses

Assume that we have a sample of observations on the spot exchange rate, *S*, covering the period between a point in time 1 and the present time *t*. Hence, we have the observations S_1, S_2, …, S_t. Using the spot rate as a forecaster implies that

$$E_t(S_{t+1}) = S_t, \tag{1}$$

where *E* is the expectation operator. The rationale underlying this forecaster is the strict version of the random walk model, which can be represented by the equation

$$S_{t+1} = \alpha + \beta S_t + \varepsilon_t . \tag{2}$$

such that $(\alpha, \beta) = (0,1)$ and ε_t is a random error term that has the properties $E(\varepsilon_t) = 0$, $E(\varepsilon_t \varepsilon_{t-j}) = \sigma_\varepsilon^2$ for $j = 0$, and $E(\varepsilon_t \varepsilon_{t-j}) = 0$ for $j \neq 0$.

The problem here is that the coefficient restriction $(\alpha, \beta) = (0,1)$ is typically imposed when it should be tested for. If evidence is found against the coefficient restriction, particularly the presence of a significant drift factor (α), then the use of the spot rate as a forecaster becomes invalid. In order to allow for the possibility of time-varying coefficients, equation (2) is written as a structural time series model with time-varying parameters (in logarithmic form) as

$$s_t = \alpha_t + \beta_t s_{t-1} + \varepsilon_t \,, \tag{3}$$

where lower-case letters indicate the logarithms of the underlying variables. Once equation (3) is written in state space form, it can be estimated by maximum likelihood, using the Kalman filter to update the state vector along the lines suggested by Harvey (1989).

Using the forward rate as a forecaster is based on the unbiased efficiency hypothesis, postulating that the forward rate is an unbiased and efficient forecaster of the spot rate. This hypothesis can be illustrated with the help of the following example of speculation on the relationship between the spot and forward exchange rates. If a speculator believes that the one-period forward exchange rate will be lower than the spot rate prevailing at time $t+1$, it will be profitable to buy (the foreign currency) forward and sell spot when the forward contract matures at $t+1$. Let S_{t+1} be the spot rate prevailing at time $t+1$ where t is the present time and F_t be the forward rate agreed upon at time t for delivery at time $t+1$. If the speculator is correct, he or she will make profit amounting to the difference between the selling rate and the buying rate. Hence

$$\pi_{t+1} = S_{t+1} - F_t \,. \tag{4}$$

If this speculator acts on the basis of public information, then there is no reason why other speculators do not follow suit to obtain the same profit as the first speculator (hence, the assumption of rational expectations). If this happens, the resulting increase in the demand for forward contracts will raise the forward rate and reduce profit until the latter disappears. At time t, when the decision to speculate is taken, S_{t+1} is not known, which means that the speculator has to act on the basis of his or her expectation with respect to the spot exchange rate. Hence, the speculator buys forward at time t and sells spot at time $t+1$ if the expected value of the spot exchange rate is higher than the forward rate (that is, if $E_t(S_{t+1}) > F_t$). Assuming risk neutrality, speculation comes to an end when

$$E_t(S_{t+1}) = F_t \,, \tag{5}$$

or if profit is expected to be zero, that is

$$E_t(\pi_{t+1}) = 0 \,. \tag{6}$$

The term representing speculative profit, π_{t+1}, is also the forecasting error when the forward exchange rate is used as a forecaster of the spot rate. Thus, the idea is that changes in the forces of supply and demand resulting from the activity of speculators will keep the forecasting error (the profit) at zero, making the forward rate (on average) equal to the spot exchange rate prevailing on the maturity date of the forward contract.

The problem is that the empirical evidence for the unbiased efficiency hypothesis is rather weak (see, for example, Lewis, 1995; Engel, 1996; Wang and Jones, 2002; Zhu, 2002). In general, it is agreed now that unbiased efficiency does not hold and that a risk premium does exist. However, it is likely the case that the risk premium is not detected because it changes signs and averages zero. This implies that the risk premium is time-varying and can only be detected using a TVP regression. For this purpose, unbiased efficiency is written as a structural time series model in a logarithmic form as

$$s_t = \alpha_t + \beta_t f_{t-1} + \varepsilon_t \,. \tag{7}$$

Hence, if testing reveals that the restriction $(\alpha_t, \beta_t) = (0,1)$ does not hold, then there is no case for using the forward rate as a forecaster. Again, equation (7) will be estimated once the equation is written in state space form. This methdodology is explained in the following section.

3. Econometric Methodology

In a structural time series model of the form $s_t = \mu_t + \varphi_t x_{t-1} + \varepsilon_t$, where the trend component x_t is either s_t, x_t, or f_t, which represents the long-term movement in a series. This component can be written in the most general form as

$$\mu_t = \mu_{t-1} + \phi_{t-1} + \eta_t \tag{8}$$

$$\phi_t = \phi_{t-1} + \zeta_t \,, \tag{9}$$

where $\eta_t \sim NID(0, \sigma_\eta^2)$, $\zeta_t \sim NID(0, \sigma_\zeta^2)$, and μ_t is a random walk with a drift factor, ϕ_t, which follows a first order autoregressive process as represented by equation (9). This process collapses to a simple random walk with drift if $\sigma_\zeta^2 = 0$ and to a deterministic linear trend if $\sigma_\eta^2 = 0$ as well. If, on the other hand, $\sigma_\eta^2 = 0$ while $\sigma_\zeta^2 \neq 0$, the process will have a trend which changes relatively smoothly (see Koopman et al., 1995).

The model can be written in state space form as

$$s_t = \mathbf{Z}_t' \mathbf{A}_t + \varepsilon_t \tag{10}$$

$$\mathbf{A}_t = \mathbf{B}_t \mathbf{A}_{t-1} + \mathbf{v}_t \,. \tag{11}$$

Equations (10) and (11) are the measurement and transition equations respectively in which $\mathbf{Z}_t$ is an $m \times 1$ fixed vector, $\mathbf{A}_t$ is an $m \times 1$ unobservable state vector and $\mathbf{B}_t$ is a non-stochastic $m \times m$ matrix. Equation (11) tells us that the state vector is updated each period and that it is also subject to serially uncorrelated random disturbances (represented by the $m \times 1$ vector $\mathbf{v}_t$) with zero mean and variance covariance matrix $\mathbf{M}_t$. Once the model is written in state space form, estimates of the parameters of the model can be obtained by maximum likelihood using the Kalman filter to update the estimated values of the unobserved components. If $\mathbf{a}_{t-1}$ is an estimate of $\mathbf{A}_{t-1}$ and $\mathbf{R}_{t-1}$ is its covariance matrix, then the optimal (minimum mean square error) linear projection of $\mathbf{a}_t$ and $\mathbf{R}_t$ at time $t-1$ are given by

$$\mathbf{a}_{t|t-1} = \mathbf{B}\mathbf{a}_{t-1} \tag{12}$$

and

$$\mathbf{R}_{t|t-1} = \mathbf{B}\mathbf{R}_{t-1}\mathbf{B} + \mathbf{M}_t \, . \tag{13}$$

The Kalman filter updates $\mathbf{a}_{t|t-1}$ with the new information contained in s_t according to a process which can be described by the equations

$$\mathbf{a}_t = \mathbf{a}_{t|t-1} + \mathbf{R}_{t|t-1}\mathbf{Z}_t(s_t - \mathbf{Z}_t'\mathbf{a}_{t|t-1}) / k_t \tag{14}$$

$$\mathbf{R}_t = \mathbf{R}_{t|t-1} - \mathbf{R}_{t|t-1}\mathbf{Z}_t\mathbf{Z}_t'\mathbf{R}_{t|t-1} / k_t \, , \tag{15}$$

where

$$k_t = \mathbf{Z}_t'\mathbf{R}_{t|t-1}\mathbf{Z}_t + \sigma_\varepsilon^2 \, . \tag{16}$$

Equation (14) tells us that the predictor, $\mathbf{a}_{t|t-1}$, is updated by incorporating the prediction error, $p_t - \mathbf{Z}_t'\mathbf{a}_{t|t-1}$, weighted by the Kalman gain, $\mathbf{R}_{t|t-1}\mathbf{Z}_t / k_t$. Likewise, equation (15) shows that the covariance matrix, $\mathbf{R}_t$, is updated such that its new value is equal to the old value less $\mathbf{Z}_t'\mathbf{R}_{t|t-1}$ weighted by the Kalman gain.

Three diagnostic test statistics for serial correlation (*Q*), normality (*N*), and heteroscedasticity (*H*) will be reported. The following is a brief description of these statistics (for more details see Koopman et al., 1995). Let the residuals be v_t, where $t = d+1, \ldots\ldots, T$ and *T* is the sample size. The diagnostic test for serial correlation is the Ljung-Box *Q* statistic. It is calculated on the basis of the first *n* autocorrelation coefficients of the residuals as

$$Q(n,q) = T(T+2)\sum_{t=j}^{n} \frac{r_j^2}{T-n} \, , \tag{17}$$

where *r* is the autocorrelation coefficient. In this case *Q* is distributed as $\chi^2(q)$ where $q = n+1-k$ and *k* is the number of estimated parameters.

The diagnostic for normality, *N*, is the Bowman-Shenton test statistic, which measures the extent of departure of the third and fourth moments from their expected values under normality. The third and fourth moments are measures of skewness and kurtosis respectively (for a normal distribution they have values of 0 and 3). The test statistic is calculated as

$$N = \left(\frac{T-d}{6}\right)b_1 + \left(\frac{T-d}{24}\right)(b_2 - 3)^2, \tag{18}$$

where b_1 is the square of the third moment and b_2 is the fourth moment. The test statistic is distributed as $\chi^2(2)$.

Finally, H is a diagnostic for heteroscedasticity that is calculated as

$$H(h) = \sum_{t=T-h+1}^{T} v_t^2 \Bigg/ \sum_{t=d+1}^{d+1+h} v_t^2, \tag{19}$$

which is the ratio of the squares of the last *h* residuals to the squares of the first *h* residuals where *h* is the closest integer to *T*/3. Thus, a high (low) value of the statistic indicates an increase (decrease) in the variance over time.

4. Data and Empirical Results

Equations (3) and (7) are estimated on the basis of quarterly data covering the period 1974:1–2000:4 using six exchange rates involving the following currencies: U.S. dollar (USD), Canadian dollar (CAD), Japanese yen (JPY), and British pound (GBP). The data were obtained from the DX data base as reported in OECD's Economic Outlook. The results are presented in Table 1, which reports the estimated coefficients (the final state vector) as well as some diagnostics and goodness of fit measures. In this case Q is distributed as $\chi^2(8)$, N is distributed as $\chi^2(2)$ and H is distributed as $F(28,28)$ or $F(35,35)$ according to the sample size. Differences in sample size result from the absence of data on forward rates prior to 1979.

Consider the results for equation (3) first. For all exchange rates, the estimated model fits very well and passes all of the diagnostics tests, hence providing reliable results. These results tell us that the coefficient restriction $(\alpha_t, \beta_t) = (0,1)$ does not hold (t statistics are reported in parentheses). In general, there is a significant drift factor, α_t, whereas the coefficient β_t is significantly different from one. Hence, generating forecasts (which are used as a benchmark for measuring forecasting accuracy) by imposing this restriction can only be faulty.

Trying to improve the forecast by taking into account the drift factor is problematical because the drift factor changes over time, as can be seen in Figure 1.

The results of estimating equation (7) show that there is indeed a significant risk premium and that the coefficient on the lagged forward rate is significantly different from one. Thus, unbiasedness does not hold, which makes the forward rate a faulty forecaster. The time-varying nature of the risk premium is shown in Figure 2. In the following section we provide rationale for the failure of unbiased efficiency.

5. Explaining the Failure of Unbiased Efficiency

If the forward rate is not an unbiased forecaster of the future spot rate, how can we explain the bias? Most economists tend to explain the bias in terms of the irrationality of expectations and the presence of risk premium. The results presented in the previous section and elsewhere support the presence of a time-varying risk

Table 1. Estimation Results (Equations 3 and 7)

	CAD/USD	GBP/USD	JPY/USD	CAD/GBP	JPY/GBP	JPY/CAD
Equation (3)						
α_t	0.120	−0.338	4.092	0.704	3.957	3.983
	(4.13)	(−9.11)	(9.01)	(8.18)	(7.31)	(8.54)
β_t	0.706	0.160	0.139	0.127	0.234	0.083
	(10.23)	(1.66)	(1.43)	(1.17)	(2.19)	(0.76)
R^2	0.96	0.88	0.97	0.79	0.97	0.97
Q	10.12	12.82	11.96	12.06	4.82	6.91
H	0.82	0.71	1.28	0.42	1.27	1.15
N	0.21	0.37	2.41	0.40	3.98	0.87
Equation (7)						
α_t	0.382	−0.333	4.362	0.283	3.996	4.001
	(9.66)	(−9.06)	(8.51)	(3.91)	(7.54)	(8.65)
β_t	0.057	0.173	0.082	0.648	0.227	0.076
	(0.59)	(1.83)	(0.75)	(7.90)	(2.17)	(0.70)
R^2	0.97	0.88	0.96	0.80	0.97	0.97
Q	9.56	12.97	9.83	12.35	4.54	6.83
H	0.84	0.72	1.00	0.42	1.28	1.14
N	0.25	0.33	2.35	0.99	4.63	0.90

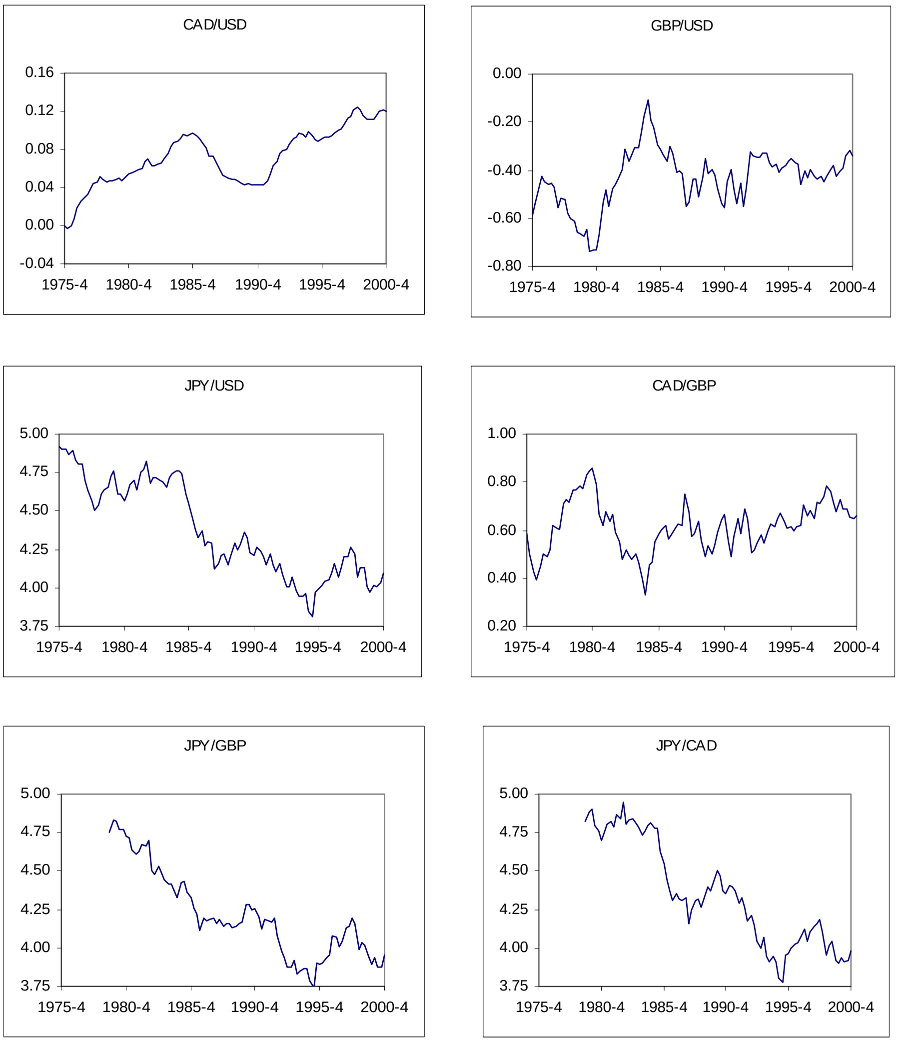
premium, so we now turn to the irrationality of expectations as an explanation for the failure of unbiasedness.

It has been by now established that the idea of rational expectations in the foreign exchange market is bizarre, to say the least. To start with, the rational expectations hypothesis precludes heterogeneity in favour of some “representative agent hypothesis”.

But there is vast literature disputing the validity of the representative agent hypothesis, rejecting it in favour of heterogeneity on the grounds that the former is inconsistent with observed trading behaviour and the existence of speculative markets. Indeed, it is arguable that there is no incentive to trade if all market participants are identical with respect to information, endowments, and trading strategies (Frechette and Weaver, 2001). Brock and Hommes (1997), Cartapanis (1996), and Dufey and Kazemi (1991) have demonstrated that persistence of heterogeneity can result in boom and bust behaviour under incomplete information. Furthermore, Harrison and Kreps (1978), Varian (1985), De Long et al. (1990), Harris and Raviv (1993), and Wang (1998) have shown that heterogeneity can lead to market behaviour that is similar to what is observed empirically.

In response to concerns about the representative agent hypothesis, financial economists started to model the behaviour of traders in speculative markets in terms of heterogeneity. Chavas (1999) views market participants to fall in three categories in terms of how they form expectations: naïve, quasi-rational, and rational. Weaver and Zhang (1999) allowed for a continuum of heterogeneity in expectations and

Figure 1. Time-Varying Drift Factors



explained the implications of the extent of heterogeneity for price level and volatility in speculative markets. Frechette and Weaver (2001) classify market participants by the direction of bias in their expectations, their bullish or bearish sentiment, rather than by how they form expectations. The message that comes out of this research is loud and clear: homogeneity is conducive to the emergence of one-sided markets, whereas heterogeneity is more consistent with behaviour in speculative markets characterised by active trading and volatility.

Figure 2. Time-Varying Risk Premia

There is indeed little evidence for rational expectations in the foreign exchange market, which is a conclusion that is derived from studies based on both survey data and the demand for money approach. For example, Ito (1990) argues that to the extent that individuals are not likely to possess private information, the presence of individual effects may reflect the failure of the hypothesis. Davidson (1982) argues against the rational expectations hypothesis by saying that it is a poor guide to real world economic behaviour because it assumes that market participants passively forecast events rather than cause them. Both Harvey (1999) and Moosa (1999) find no evidence for rational expectations in the foreign exchange market based on survey data and estimates of the demand for money function respectively. Moosa (2002) finds strong empirical support for the post-Keynesian hypothesis on expectation formation in the foreign exchange market, which rejects rational expectations.

Apart from the presence of the risk premium and the irrationality of expectations, some other explanations have been put forward for the failure of the unbiased efficiency hypothesis. These explanations include covered interest parity, the peso problem, central bank intervention, transaction costs, political risk, foreign exchange risk, purchasing power risk, interest rate risk, differences in real interest and exchange rates, and the effect of news (see Moosa, 2000, for details). Out of these, the least emphasised but the most plausible explanation is that of covered interest parity (CIP). This is because the CIP condition implies that the spot and forward rates are related contemporaneously, which necessarily implies that the lagged model represented by equation (7) is misspecified, unless the forward rate follows a random walk with drift or more generally an AR(1) process. In a logarithmic form, covered interest parity can be written as

$$f_t = \gamma_t + s_t \,. \tag{20}$$

If the exchange rates are expressed as the price of one unit of currency y in terms of currency x then

$$\gamma = \log(1+i_x) - \log(1+i_y)\,, \tag{21}$$

where i_x and i_y are the interest rates on currencies x and y, respectively. We can write CIP as a structural time series model of the form

$$s_t = \delta_t + \phi_t f_t + \lambda_t f_{t-1} + \varepsilon_t\,, \tag{22}$$

where $\delta_t = -\gamma_t$, which is a factor that reflects the interest rate differential (and perhaps some risk premium). If the forward rate follows the AR(1) process with a drift factor such that $f_t = a_t + b_t f_{t-1} + \xi_t$, then it follows that $s_t = (\delta_t + \phi_t a_t) + \phi_t b_t f_{t-1} + (\phi_t \xi_t + \varepsilon_t)$, which is a reduced form equation relating the spot rate to the lagged forward rate. Equation (22) clearly shows that the relationship between the spot and forward exchange rates is contemporaneous. The specification represented by equations (20) and (22) must be credible because it represents the condition precluding riskless covered arbitrage, and so it typically holds. It also means that the spot exchange rate does not follow the forward rate because they are determined simultaneously by the same factors, and hence they are tied up by an exact no-arbitrage condition. This condition will be valid if the coefficient restriction $\phi_t = 1$ is satisfied, but the coefficient $\delta_t = 0$ may or may not be satisfied depending on whether or not there is a significant interest differential between the two underlying currencies.

The results of estimating equation (22) are reported in Table 2. As we can see, the coefficient restriction $\phi_t = 1$ cannot be rejected in any case whereas the restriction $\delta_t = 0$ is rejected in one case only because there is a significant interest differential between the yen and the pound. The insignificance of the intercept term is also illustrated by Figure 3.

Table 2. Estimation Results (Equation 22)

	CAD/USD	GBP/USD	JPY/USD	CAD/GBP	JPY/GBP	JPY/CAD
δ_t	0.006	−0.005	0.011	0.010	0.162	0.033
	(1.08)	(−1.16)	(0.34)	(1.01)	(2.37)	(1.11)
ϕ_t	0.987	0.985	1.001	0.987	0.971	0.996
	(82.34)	(111.61)	(149.93)	(85.27)	(81.03)	(143.26)
R^2	0.99	0.99	0.99	0.99	0.99	0.99
Q	4.03	6.83	10.25	6.00	9.78	8.76
H	0.93	1.76	0.03	0.22	0.08	0.29
N	0.41	1.46	4.11	4.87	3.66	2.75

In order to show that the contemporaneous relationship between the spot and forward rates dominates the lagged relationship, we estimate the equation

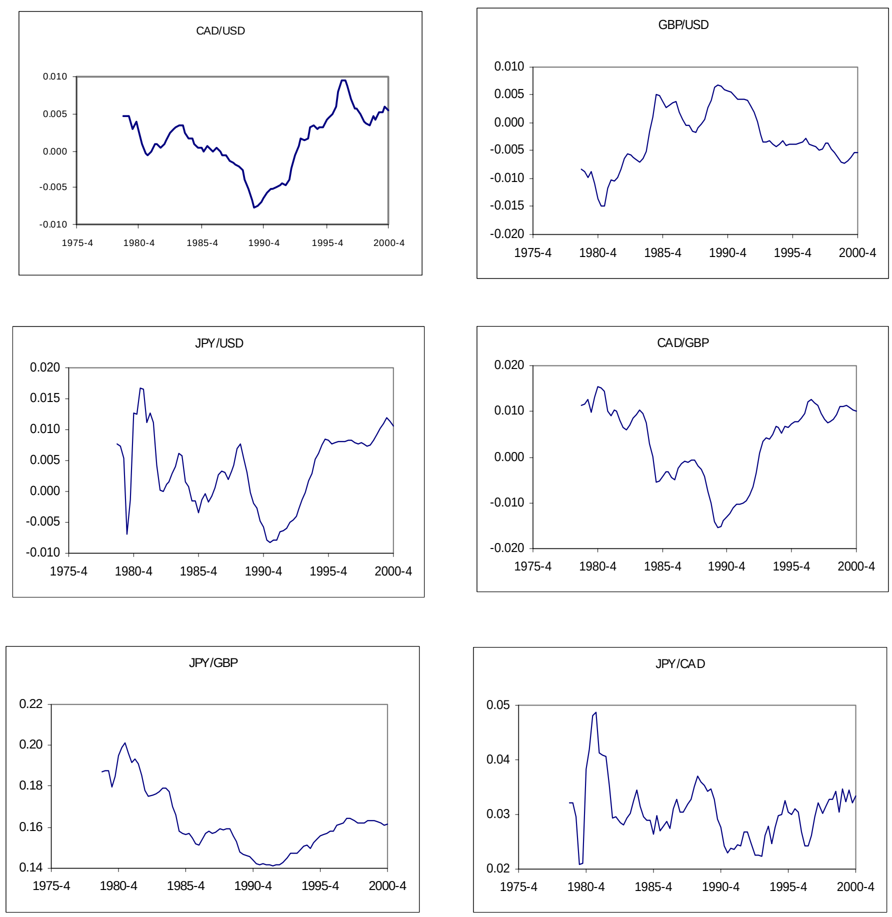
$$s_t = \delta_t + \phi_t f_t + \lambda_t f_{t-1} + \varepsilon_t \,. \tag{22}$$

The results reported in Table 3 show that the restriction $\lambda_t = 0$ cannot be rejected in any case. This is solid evidence indicating that the relationship between the spot and forward rates is contemporaneous, not lagged.

Table 3. Estimation Results (Equation 23)

	CAD/USD	GBP/USD	JPY/USD	CAD/GBP	JPY/GBP	JPY/CAD
δ_t	0.009	0.001	0.070	0.000	0.164	0.068
	(1.69)	(0.14)	(1.67)	(−0.03)	(2.41)	(1.86)
ϕ_t	0.998	0.962	1.006	0.971	0.972	0.999
	(70.09)	(92.51)	(149.58)	(71.59)	(62.95)	(140.92)
λ_t	−0.021	0.043	−0.027	0.034	−0.012	−0.016
	(−1.54)	(1.53)	(−1.66)	(1.09)	(−0.09)	(−1.56)
R^2	0.99	0.99	0.99	0.99	0.99	0.99
Q	2.62	5.06	10.76	5.50	10.73	11.93
H	1.00	0.21	0.05	0.22	0.08	0.29
N	0.08	4.60	3.95	3.32	1.88	2.99

Figure 3. The Intercept Term in the CIP Condition



6. Concluding Remarks

The main argument put forward in this paper is that market-based forecasting is flawed and that the spot and forward rates are inadequate benchmarks for measuring the forecasting power of econometric models of exchange rates. This is because market-based forecasting rests on the simple random walk hypothesis and the unbiased efficiency hypothesis, which are not empirically valid. The empirical evidence presented in this paper does not support the two hypotheses, indicating the existence of a significant time-varying drift factor and risk premium.

We can also demonstrate that the simple random walk and the unbiased efficiency hypotheses give some misleading results that are in contrast with other more plausible hypotheses. Consider the two hypotheses, which can be written in a deterministic form as $S_t = S_{t-1}$ and $S_t = F_{t-1}$ (writing the two equations in a stochastic form by adding error terms does not make any difference for the argument). If we combine the two equations we obtain $S_{t-1} = F_{t-1}$, which implies that the underlying currencies always sell at a forward par. But this is in contrast with covered interest parity, which tells us that this would be the case only if the interest rates on the two currencies are equal.

Market-based foresting also leads to faulty financial decisions. If the forward rate is used as a forecaster, a decision to hedge foreign currency payables and receivables will never be taken, because the no-hedge decision and the (forward) hedge decision will lead to identical results in terms of the base currency value of payables and receivables. By using the spot rate as a forecaster, we reach the conclusion that we should always go long on a high interest currency and short on a low interest currency, which may not always be a sound decision. This is because the currency factor could overwhelm the interest rate differential, leading to a loss on the underlying position. Using the forward rate as a forecaster also leads to the conclusion that a long position should always be taken on a currency selling at a forward premium, whereas a short position should be taken on a currency selling at a forward discount. But there is no guarantee that such a strategy will be always profitable. In fact, it will be profitable if the unbiased efficiency hypothesis is valid, but unprofitable if the random walk hypothesis is valid.

One issue remains, however. Financial decision making pertaining to situations involving foreign exchange risk requires exchange rate forecasting as an input. If, as it is frequently claimed, econometric models cannot outperform the current spot or lagged forward rate in out-of-sample forecasting, then market-based forecasting may be the best means of generating forecasts (particularly since it is free). This argument is not valid, not only because market-based forecasting leads to faulty financial decisions, but also because it is a fallacy that econometric models cannot do a better job than market-based forecasting. It is only badly specified and improperly estimated models that produce inferior forecasts.

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