Controversies in Exchange Rate Forecasting

- The 'random walk' school
  – Exchange rates cannot be forecast
- The 'technical' school
  – Rates have patterns in the short run
- The 'fundamentals' school
  – Rates have patterns in the long run
The Case Against Currency Forecasting (1 of 3)

- It's very hard to forecast currencies
  - The structural macroeconomic approach
    - Which model? Which variables?
    - Where to get future RHS variables?
  - The non-structural approaches
    - Which approach? Which specification?
  - Common econometric problems
    - How much past data?
    - Will model work out of sample?

The Case Against Currency Forecasting (2 of 3)

Many economists say: It's hard to forecast!

- "Economists do not yet understand the determinants of short- to medium-run movements in exchange rates. Neither models of exchange rates based on macroeconomic fundamentals nor the forecasts of market participants as embodied in the forward rate or survey data can explain exchange rate movements better than a naive alternative such as a random walk model. Worse yet, exchange rate changes are hard to explain after the fact …" (Richard Meese, 1990, p.132)
- "It is now widely accepted that standard observable macroeconomic variables are not capable of explaining, much less predicting ex ante, the majority of short-term changes in the exchange rate." [emphasis added] (Jeffrey Frankel and Kenneth Froot, 1990, p. 181)
The Case Against Currency Forecasting (3 of 3)

2. Theory of Market Efficiency
   - “Prices fully reflect available information”
   - Currency markets are very competitive, liquid, few barriers to entry, and populated by very smart people
   - Surprising if obvious (or low risk) currency profit opportunities

3. “Speculative Efficiency” Hypothesis
   - Forecasting is a competitive industry
   - Use of a good forecast undermines its value

The Case In Favor of Currency Forecasting (1 of 2)

• It’s not so hard to forecast currencies
  • Accuracy is not essential, getting direction right adds value
  • Traditionally econometric models are evaluated on the basis of accuracy (Mean Squared Error), but “percentage correct” may be a better indication of a forecasts value for certain hedging or speculation programs
  • Models that explain a small percentage of FX changes \( R^2 = 5-10\% \) may be very valuable in certain hedging or speculation programs
The Case In Favor of Currency Forecasting (2 of 2)

2. Shortage of speculators who act on forecasts
   – Corporate treasurers who always hedge
   – Investment managers who are not permitted to take open currency positions
   – FX traders who close positions at day’s end

3. FX markets may violate efficiency
   – Government intervention
   – Rates “overshoot,” then “mean revert” longer run

Forecast Performance Evaluation: Accurate versus Useful Forecasts

\[ \hat{S}_1 \quad F_{t+n} \quad S_{t+n} \quad \hat{S}_2 \]

\[
\begin{align*}
&\hat{S}_1 & \hat{S}_2 \\
&$1.99 & $2.00 & $2.02 & $2.08
\end{align*}
\]

Consider two forecasters (\( \hat{S}_1 \) and \( \hat{S}_2 \)) as above. \( \hat{S}_1 \) is more accurate, but \( \hat{S}_2 \) is on the “right side of the forward rate.” Which would you prefer to follow?
Measuring Forecast Accuracy

• The traditional econometric approach begins with the forecast error made at time $t$:

$$e_t = \frac{\hat{S}_{t,j} - S_{t+j}}{S_{t+j}}$$

where $\hat{S}_{t,j}$ is the $j$-period ahead forecast made at time $t$,

- $S_{t+j}$ is the actual spot rate at time $t+j$.

• The mean squared error (MSE), $\left(\sum \frac{e_i^2}{n}\right)$, and the root mean squared error, $\sqrt{\text{MSE}}$, are commonly used to estimate the average error size.

Measuring Forecast Usefulness

• In the absence of a currency risk premium, the “right side of the market” implies the “right side of the forward rate”.

<table>
<thead>
<tr>
<th>Actual Exchange Rate Change</th>
<th>Predicted Exchange Rate Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_{t+j} &gt; F_{t,j}$</td>
<td>$\hat{S}<em>{t,j} &gt; F</em>{t,j}$</td>
</tr>
<tr>
<td>$S_{t+j} &lt; F_{t,j}$</td>
<td>$\hat{S}<em>{t,j} &lt; F</em>{t,j}$</td>
</tr>
<tr>
<td>$S_{t+j} &lt; F_{t,j}$</td>
<td>$\hat{S}<em>{t,j} &gt; F</em>{t,j}$</td>
</tr>
<tr>
<td>$S_{t+j} &gt; F_{t,j}$</td>
<td>$\hat{S}<em>{t,j} &lt; F</em>{t,j}$</td>
</tr>
</tbody>
</table>
Measuring Usefulness

• To measure usefulness, calculate:
  \[
  \text{the } \% \text{ of correct forecasts, } p = \frac{\text{number of correct forecasts, } r}{\text{total number of forecasts, } n}
  \]

• Then, the test for usefulness is:
  \[
  H_0 : p = 0.5 \text{ (no timing or expertise)}
  \]
  \[
  H_1 : p > 0.5 \text{ (positive timing or expertise)}
  \]

• According to the binomial distribution:
  \[
  E(p) = \frac{r}{n} \quad \text{Var}(p) = \frac{p(1-p)}{n}
  \]

Measuring Statistical Significance of Usefulness (% Correct)

A Test for Forecasting Expertise
Percentage Correct Method

No. of Correct Forecasts

\[ (m,s) = (50,5.0) - - - (m,s) = (60,5.5) \]