FORECASTING EXCHANGE RATES

WHY DO FIRMS FORECAST EXCHANGE RATES?

Virtually every operation of an MNC can be influenced by changes in exchange rates. The following are some of the corporate functions for which exchange rate forecasts are necessary:

* *Hedging decision.* MNCs constantly face the decision of whether to hedge future payables and receivables in foreign currencies. Whether a firm hedges may be determined by its forecasts of foreign currency values.

*Karatina Co., based in Kenya, plans to pay for clothing imported from Uganda in 90 days. If the forecasted value of the Uganda shilling in 90 days is sufficiently below the 90-day forward rate, the MNC may decide not to hedge. Forecasting may enable the firm to make a decision that will increase its cash flows.*

* *Short-term financing decision.* When large corporations borrow, they have access to several different currencies. The currency they borrow will ideally (1) exhibit a low interest rate and (2) weaken in value over the financing period.

Nyeri Co. considers borrowing Japanese yen to finance its KENYA operations because the yen has a low interest rate. If the yen depreciates against the KENYA Shilling over the financing period, the firm can pay back the loan with fewer Shillings (when converting those Shillings in exchange for the amount owed in yen). The decision of whether to finance with yen or Shillings is dependent on a forecast of the future value of the yen. ■

* *Short-term investment decision.* Corporations sometimes have a substantial amount of excess cash available for a short time period. Large deposits can be established in several currencies. The ideal currency for deposits will (1) exhibit a high interest rate and (2) strengthen in value over the investment period.
* *Capital budgeting decision.* When an MNC’s parent assesses whether to invest funds in a foreign project, the firm takes into account that the project may periodically require the exchange of currencies. The capital budgeting analysis can be completed only when all estimated cash flows are measured in the parent’s local currency.
* *Earnings assessment.* The parent’s decision about whether a foreign subsidiary should reinvest earnings in a foreign country or remit earnings back to the parent may be influenced by exchange rate forecasts. If a strong foreign currency is expected to weaken substantially against the parent’s currency, the parent may prefer to expedite the remittance of subsidiary earnings before the foreign currency weakens. Exchange rate forecasts are also useful for forecasting an MNC’s earnings. When earnings of an MNC are reported, subsidiary earnings are consolidated and translated into the currency representing the parent firm’s home country.
* *Long-term financing decision.* Corporations that issue bonds to secure long-term funds may consider denominating the bonds in foreign currencies. They prefer that the currency borrowed depreciate over time against the currency they are receiving from sales. To estimate the cost of issuing bonds denominated in a foreign currency, forecasts of exchange rates are required.

FORECASTING TECHNIQUES

The numerous methods available for forecasting exchange rates can be categorized into four general groups: (1) technical, (2) fundamental, (3) market based, and (4) mixed.

Technical Forecasting

**Technical forecasting** involves the use of historical exchange rate data to predict future values.

There may be a trend of successive daily exchange rate adjustments in the same direction, which could lead to a continuation of that trend. Alternatively, there may be a trend of the average daily change in the exchange rate per week over several recent weeks. A trend of higher mean daily exchange rate adjustments on a weekly basis may indicate that the exchange rate will continue to appreciate in the future.

Alternatively, there may be some technical indicators that a correction in the exchange rate is likely, which would result in a forecast that the exchange rate will reverse its direction.

Example

*Tomorrow Kajiado Co. has to pay 10 million Tanzania Shillings for supplies that it recently received from Tanzania. Today, the Tanzania Shilling has appreciated by 3 percent against the Kenya Shilling. Kajiado Co. could send the payment today so that it would avoid the effects of any additional appreciation tomorrow. Based on an analysis of historical time series, Kajiado has determined that whenever the Tsh. appreciates against the Ksh. by more than 1 percent, it experiences a reversal of about 60 percent of that change on the following day. (Refer to solutions in your notes).*

Limitations of Technical Forecasting.

MNCs tend to make only limited use of technical forecasting because it typically focuses on the near future, which is not very helpful for developing corporate policies. Most technical forecasts apply to very short-term periods such as one day because patterns in exchange rate movements are more systematic over such periods. Since patterns may be less reliable for forecasting long-term movements over a quarter, a year, or 5 years from now, technical forecasts are less useful for forecasting exchange rates in the distant future. Thus, technical forecasting may not be suitable for firms that need to forecast exchange rates in the distant future. In addition, technical forecasting rarely provides point estimates or a range of possible future values. Because technical analysis typically cannot estimate future exchange rates in precise terms, it is not, by itself, an adequate forecasting tool for financial managers of MNCs.

A technical forecasting model that has worked well in one particular period will not necessarily work well in another. With the abundance of technical models existing today, some are bound to generate speculative profits in any given period. If the pattern of currency values over time appears to be random, then technical forecasting is not appropriate. Unless historical trends in exchange rate movements can be identified, examination of past movements will not be useful for indicating future movements.

Many foreign exchange participants argue that even if a particular technical forecasting model is shown to lead consistently to speculative profits, it will no longer be useful once other participants begin to use it. Trading based on the model’s recommendation will push the currency value to a new position immediately. Speculators using technical exchange rate forecasting often incur large transaction costs due to their frequent trading. In addition, monitoring currency movements in search of a systematic pattern can be time-consuming. Furthermore, speculators need sufficient capital to absorb losses that may occur.

Fundamental Forecasting

Fundamental forecasting is based on fundamental relationships between economic variables and exchange rates. Recall that a change in a currency’s spot rate is influenced by the following factors:

Where; is the change in differential between inflation in Kenya and Inflation in the foreign country.

Is the change in differential between interest rates in Kenya and Interest rates in the foreign country.

Change in the differential between the Kenyan income level and the foreign country’s income level

Change in government controls

Change in expectations of future exchange rates

Given current values of these variables along with their historical impact on a currency’s value, corporations can develop exchange rate projections.

(refer to the class discussion on the regression model used in this)

**Use of PPP for Fundamental Forecasting. (Refer to class notes)**

Limitations of Fundamental Forecasting.

Although fundamental forecasting accounts for the expected fundamental relationships between factors and currency values, the following limitations exist:

1. The precise timing of the impact of some factors on a currency’s value is not known. It is possible that the full impact of factors on exchange rates will not occur until two, three, or four quarters later. The regression model would need to be adjusted accordingly.

2. As mentioned earlier, some factors exhibit an immediate impact on exchange rates. They can be usefully included in a fundamental forecasting model only if forecasts can be obtained for them. Forecasts of these factors should be developed for a period that corresponds to the period for which a forecast of exchange rates is necessary. In this case, the accuracy of the exchange rate forecasts will be somewhat dependent on the accuracy of these factors. Even if a firm knows exactly how movements in these factors affect exchange rates, its exchange rate projections may be inaccurate if it cannot predict the values of the factors.

3. Some factors that deserve consideration in the fundamental forecasting process cannot be easily quantified. For example, what if large Kenyan exporting firms experience an unanticipated labour strike, causing shortages? This will reduce the availability of Kenyan goods for UGANDAN consumers and therefore reduce UGANDAN demand for Kenyan shillings. Such an event, which would put downward pressure on the Kenyan shilling value, normally is not incorporated into the forecasting model.

4. Coefficients derived from the regression analysis will not necessarily remain constant over time

Market-Based Forecasting

The process of developing forecasts from market indicators, known as market-based forecasting, is usually based on either (1) the spot rate or (2) the forward rate.

*Use of the Spot Rate.*

Today’s spot rate may be used as a forecast of the spot rate that will exist on a future date. To see why the spot rate can be a useful market-based forecast, assume the Ksh. is expected to appreciate against the dollar in the very near future. This expectation will encourage speculators to buy the Ksh. with U.S. dollars today in anticipation of its appreciation, and these purchases can force the Ksh’s value up immediately. Conversely, if the Ksh is expected to depreciate against the dollar, speculators will sell off pounds now, hoping to purchase them back at a lower price after they decline in value. Such actions can force the Ksh. to depreciate immediately. Thus, the current value of the pound should reflect the expectation of the pound’s value in the very near future. Corporations can use the spot rate to forecast since it represents the market’s expectation of the spot rate in the near future.

Use of the Forward Rate.

A forward rate quoted for a specific date in the future is commonly used as the forecasted spot rate on that future date. That is, a 30-day forward rate provides a forecast for the spot rate in 30 days, a 90-day forward rate provides a forecast of the spot rate in 90 days, and so on. Recall that the forward rate is measured as

Where p represents the forward premium. Since p represents the percentage by which the forward rate exceeds the spot rate, it serves as the expected percentage change in the exchange rate:

Example: If the one-year forward rate of the Australian dollar is $.63, while the spot rate is $.60, the expected percentage change in the Australian dollar is…

Example 2: If the one-year forward rate of the Dollar is Ksh. 87, while the spot rate is Ksh. 85, the expected percentage change in the dollar is…

**Mixed Forecasting**

Because no single forecasting technique has been found to be consistently superior to the others, some MNCs prefer to use a combination of forecasting techniques. This method is referred to as mixed forecasting. Various forecasts for a particular currency value are developed using several forecasting techniques. The techniques used are assigned weights in such a way that the weights total 100 percent, with the techniques considered more reliable being assigned higher weights. The actual forecast of the currency is a weighted average of the various forecasts developed.

REVIEW QUESTIONS

Question One

Assume that the following regression model was applied to historical quarterly data:

Where et is the percentage change in the exchange rate of the Kenya Shilling in period t

INTt is the average real interest rate differential (U.S. interest rate minus Kenyan interest rate) over period t

INFt-1 is the inflation differential (U.S. inflation rate minus Kenyan inflation rate) in the previous period

a, b, c are regression coefficients

µt is the error term

Assume that the regression coefficients were estimated as follows:

a= 0.0

b= 0.9

c= 0.8

Also assume that the inflation differential in the most recent period was 3 percent. The real interest rate differential in the upcoming period is forecasted as follows:

|  |  |
| --- | --- |
| Interest Differential | Probability |
| 0% | 30% |
| 1 | 60 |
| 2 | 10 |
|  |  |

If Stillwater, Inc., uses this information to forecast the Japanese yen’s exchange rate, what will be the probability distribution of the yen’s percentage change over the upcoming period?

Question two

*Forecasting Based on the International Fisher Effect. (Need to research on international fisher effect)*

Purdue Co. (based in the United States) exports cable wire to Kenyan manufacturers. It invoices its product in U.S. dollars and will not change its price over the next year. There is intense competition between Purdue and the local cable wire producers based in Kenya. Purdue’s competitors invoice their products in Kenyan Shillings and will not be changing their prices over the next year. The annualized risk-free interest rate is presently 3 percent in the United States, versus 8 percent in Kenya. Today the spot rate of the Kenyan shilling is 85 per dollar. Purdue Co. uses this spot rate as a forecast of the future exchange rate of the Kenyan Shilling. Purdue expects that revenue from its cable wire exports to Kenya will be about $2 million over the next year. If Purdue decides to use the international Fisher effect rather than the spot rate to forecast the exchange rate of the Kenyan dollar over the next year, will its expected revenue from its exports be higher, lower, or unaffected? Explain.