Exchange Rate Forecasting Based on Fundamental Macroeconomic Variables in a Floating Exchange Rate Regime: Evidence from an Emerging Economy

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ABSTRACT

Developing countries had a fixed exchange rate regime and avoided financial liberalization until the 1990's. In the early 2000's however, most of the developing countries abandoned their fixed exchange rate regimes in favor of floating rate regimes which in turn increased the importance of exchange rate forecasting in the emerging market economies. This paper intends to explain TR/USD (Turkish Lira/American Dollar) exchange rates by using macroeconomic fundamentals for the period between February 2001 and December 2009 on a monthly basis. A Vector Auto Regression (VAR) method is used. Among the macroeconomic Fundamentals, United States Federal Reserve Benchmark interest rates, one month Turkish Treasury Bill yields, Turkish import/export rates, m2 money supply and foreign direct investment explain the changes in TR / USD exchange rates.

Keywords: Emerging Economy, Exchange Rate, Forecasting, Macroeconomic Aggregates, Vector Auto Regression (VAR)

1. INTRODUCTION

Forecasting remains an important component of formulating macroeconomic policies, personal investment decisions or enterprise budgets. Forecasting macroeconomic variables and performance of investment instruments could yield significant advantages and opportunities especially against the backdrop of the prevailing global financial crisis and the associated policy actions exacerbating the volatility in the markets. Seasoned multinational companies or insurance and finance sector players and sovereign issuers have recently faced economic difficulties or even bankruptcy due to their inability to forecast fundamental economic variables, such as foreign exchange rates.

After the end of Bretton Woods agreements in 1970, more and more countries adopted flexible exchange rate regimes. The merit of a
flexible exchange rate system lies in its ability to insulate the economy from foreign shocks. Moreover, the flexible exchange rates allow greater policy independence in that countries can adopt their own stabilization policies. However, it has been noted that the introduction of flexible exchange rates since the breakdown of the Bretton Woods System has not resulted in domestic economies being completely insulated from external shocks. Indeed, various empirical studies document evidence for propagation of international shocks across countries regardless of the exchange rate regimes (Lastrapes & Kroeck, 1990). Furthermore, the wide swings and heightened volatility in exchange rates under the flexible exchange rate system not only pose a risk to exporters and foreign investors but also open doors for destabilizing speculation in foreign exchange rate markets. Adoption of flexible exchange rate regime has increased the volatility of foreign exchange markets and the risk associated with foreign investments (Badhani, Chhimwal, & Suyal, 2009).

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Turkey implemented an exchange rate based economic stability program under an IMF accord. The program was abandoned in February 2001 and Turkey floated its currency. Transition into the floating exchange rate regime became important from a macroeconomic decision making perspective and exchange rate forecasting models have become a relevant and important topic in Turkey as well.

Hence, the objective of this article is to adopt a vector autoregressive (VAR) modeling. Framework for the purpose of assessing-forecasting- the relationships between the TR/USD exchange rate and fundamental macro-economic variables.

The remainder of the paper is structured as follows: after the literature review section, the data and the empirical methodology are described. Subsequently, the main results are presented, and finally, a conclusion is offered.

2. LITERATURE REVIEW

The Meese and Rogoff (1983) study is one of the most important articles on the topic of exchange rate forecasting in the literature. On the basis of empirical evidence, Meese and Rogoff concluded that random walk model is a successful forecasting model for exchange rates.


There are also studies which contradict the earlier findings. Results of the studies of Woo (1985), Schinasi and Swami (1989), Kuan and Liu (1995), Brooks (1997), Gencay (1999), Hogan et al. (2001), Cuaresma et al. (2004), Kumar and Thenmozhi (2004, 2005), Hongxing et al. (2007), and Chen et al. (2008), show that their models outperform the random walk model for certain time periods and currencies. These studies conclude that the presence of nonlinearity, volatility, non-stationarity in the exchange rates was not handled properly in previous empirical models. This resulted in the random walk scoring over other models.

Studies in the domain of exchange rate forecasting have used a wide range of linear and nonlinear models such as VAR, ARIMA, ARCH/GARCH, ANN, Linear Regression.

3. DATA AND METHODOLOGY

3.1. Data

For model specification, percentage changes of a monthly data set of 11 variables for the period from February 2001 – December 2009 is used. The included variables are Turkish mint gold coin prices (mgc), current account balance...
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