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COMMUNICATION/REVIEW

Catherine Bonser-Neal. "Does Central Bank Intervention Stabilize Foreign Exchange Rates?" *Economic Review: Federal Reserve Bank of Kansas City*, Vol. 81, No. 1, First Quarter, 1996 (14 pp)

Introduction

The paper tried to establish whether central bank intervention could reduce exchange rate volatility by stopping speculative attacks against a currency. The author's concern centred on the fact that exchange rate volatility has increased since the adoption of flexible exchange rate system in 1973 and the subsequent interventions by most central banks. She observed that many European countries have intervened in foreign exchange markets when deemed necessary to reduce volatility and possibly keep exchange rates within a band around a target rate. But opinions still differ on whether these interventions could stabilize exchange rates.

The paper, therefore, sought to present empirical evidence suggesting that central bank intervention does not generally reduce exchange rate volatility but appears strongly to have had minimal effect on volatility. This it did by using "implied volatility" to measure exchange rate volatility through the estimation of a model that relates changes in volatility to central bank intervention and other economic variables.

The Highlights of the Paper

The paper identified three major factors that could cause exchange rate volatility, namely, volatility in market fundamentals, changes in expectations due to new information and speculative "bandwagons." The level of exchange rate is normally a function of the market fundamentals such as money supply, income and interest rates. Changes in expectations about these future market fundamentals or economic policies affect exchange rate volatility. On receipt of new information, market participants alter their forecasts of future economic conditions, thereby changing all exchange rates based on the forecasts which in turn lead to exchange rate volatility. The revisions to currency positions in turn imply an increase in frequency and hence in the volatility of exchange rate changes. Movements in the value of the dollar arising from speculative forces could influence exchange rate volatility. However,

these factors are without consequences as three related issues – impediment of international investment flows, uncertainty about revenues accruable from international transactions and spill-over effect on the U.S. financial markets – can easily be raised. Addition of risk on the rate of return on a foreign asset may reduce investment in foreign financial assets in periods of exchange rate volatility. In that situation, efficient allocation of resources in the world could be disrupted by exchange rate volatility which could create disincentive for movement in investment capital.

The volatility of exchange rates adversely affects international trade as firms become more reluctant to engage in international trade transactions if such volatility could compel the company to add a risk premium to the cost of goods. In addition, the burden of the higher cost, which will normally be passed to the consumers, reduces demand for the goods. Increase in exchange rate volatility threatens the stability of the financial system and impairs the conduct of monetary policy.

The author measured volatility using "implied volatility" model derived from the price of foreign currency option. The implied volatility is forward-looking, measuring the market's forecast of future exchange rate volatility by capturing the immediate and longer term effects of intervention. This is against the commonly used measures such as Standard Deviation and "Generalized Autoregressive Conditional Heteroskedasticity" (GARCH) which are computed using past values of exchange rates or a time series of past exchange rate changes. The forward-looking property is important because intervention can have opposite effects on both current and expected future exchange rate volatility.

Empirical model relating changes in volatility to intervention was applied as results from previous studies that used the GARCH methods of estimation were mixed and inconsistent. Two great advantages of using the implied volatility measure as embedded in foreign currency option prices were identified. First, its forward-looking nature with the ability to ease the market's forecast of the standard deviation of exchange rate changes over the next month. Secondly, the use of specific country macroeconomic and other variables, e.g., the United States, to ensure that volatility changes attributed to intervention remain consistent with the appropriate macroeconomic factor in the volatility. Some of the U.S. macroeconomic variables include the announced values of the money supply, trade deficit, consumers/producers price indices, industrial production, unemployment rate, lagged exchange rate volatility to control for feed-back effects from volatility to intervention and a variable to capture differences in volatilities resulting from break in trading over weekends and holidays.

Foreign currency option through which the "implied volatility" model was derived as a contract that gives the buyer the right but not the obligation to buy or sell foreign currency at a fixed price at some date in future was defined. The price of a currency option is influenced by several factors including the underlying spot exchange rate, the fixed ("strict" or "exercise") price at which the buyer of the option can buy or sell the foreign currency in the future, U.S. and foreign interest rates, and

the expected standard deviation of the change in the spot exchange rate over the life of the option.

The effectiveness of central bank's interventions is impaired by the lack of a clear criteria for intervention. However, most central banks' intervention in the foreign exchange market is guided by IMF's principles on members Exchange Rate Variability. This expects a member to intervene in order to counter disorderly conditions which may be characterized by disruptive short-term movements in the exchange value of the members' currency. Intervention in the U.S. involves the buying and selling of foreign assets by the Federal Reserve in return for U.S. dollar, which leads to increase or decrease in the U.S. money supply. Three intervention regimes were identified between 1985 and 1991, namely, the Plaza, Louvre and post-Louvre periods. While the Plaza period witnessed the "orderly" depreciation of the dollar which was formalized by the G-5 Ministers in the Plaza Agreement of 1985, the Louvre period was used to stabilize exchange rates around existing levels. However, intervention during the post-Louvre period became less frequent and more independent of other central banks. During these periods, exchange rate volatility remained a concern that guided policy all through the three regimes.

Due to the sterilization of intervention, there was no direct impact on the volatility of actual market fundamentals such as money supply, interest rates or income. It could, however, in theory affect the exchange rate through what is known as portfolio balance channel where relative quantities of domestic and foreign bonds in the hands of the public could be altered by central bank intervention. Obviously, the effect of intervention on market expectations and speculative behaviour dictates whether there will be increase or decrease in volatility. In other words, intervention may increase, decrease or have no effect on volatility.

The results showed that effect of central bank intervention changed over time and elicit mixed reactions from the market. While the Plaza period showed that central bank intervention never affected exchange rate volatility, the Louvre period indicated that intervention increased volatility and the post-Louvre period showed some evidence that intervention decreased volatility. Overall, most of the identified evidence pointed to no effect thereby providing little support for the view that central bank intervention decreases exchange rate volatility.

Comments on the Paper

Generally, the policy of intervention by central banks in the foreign exchange market is geared towards the stabilization of the value of the respective currencies of such countries. The point that can be made is that the author's analysis is in the context of developed economies. For the model to be useful in analysing the effects of interventions in the developing economies, it should consider the supply of foreign exchange which has remained far inadequate culminating in speculative attacks on their respective currencies.

The policy of intervention is always effective where the supply of foreign exchange is somewhat adequate. When applied in an economy with shortage of foreign exchange, there could be high speculative demand by desperate end-users. Under this condition, intervention may become a one directional affair as the apex bank continues to sell to end-users without buying from them at any point in time. The central bank intervenes by selling foreign exchange when exchange rate volatility is increasing due possibly to speculative demand pressures. It could also buy from the system when the rate is going below the level the economy's productive capacity could carry. That is, the rate at which foreign investments and exports could easily be discouraged.

For the developing economies, the existence of a parallel foreign exchange market (though faceless and illegal) due to foreign exchange shortages and bottlenecks in foreign exchange administration induces volatility in the foreign exchange market.

The most fundamental flaw in the analysis of the paper is the assumption that information following interventions lead to adjustments in the portfolio of market participants, thus leading to volatility. The fact is that exchange rate follows a random walk and because of the assumption of market efficiency, information flows rapidly through the market thus inducing stability rather than instability.

The ambiguous findings of the study led the author to inconclusive results and incoherent conclusions. This is to be expected from the research methodology applied by the author. The undue reliance on movement in option positions was a major defect in the study. It is well known that options are more influenced by psychological factors and chance events than economic factors that can be easily predicted through rational approaches. Factors bearing on economic fundamentals than options would have provided better results, especially for developing economies where derivatives instruments are not very common.

Overall, the paper was enlightening in terms of its technical sophistication and delivery.

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