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The Effect of USA Government Bond Rate on Exchange Rates: Fragile Currencies, Fragile Economies

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Extensive Summary

The effect of changes in interest rates on the exchange rates has been analyzed in the literature for many times. How real or expected changes in interest rates affect the exchange rates may be an important factor for determination of countries' economic fragilities. The purpose of this study is to measure the effect of changes in USA 10 year government bond rate on the currencies of countries with strong dependence on dollar.

The expansionary monetary policies and improving economic condition after 2008 crisis caused capital flow through developing countries. The economies experienced high growth through international funds thanks to high liquidity. To stimulate the economy, FED decreased the interest rates, provided funds to banks, and printed money to encourage banks for giving loans. FED had been buying bonds worth 85 billion dollar each month as a part of quantitative easing policy after the crisis. The focus of these policies were inflation and unemployment rates.

Since FED reduced purchases of treasury and signaled decreasing the interest rates, the funds from developing countries left the economy quickly and liquidity problem occurred. Because of the increasing interest rates, capital has left the Fragile Five including Turkey and this resulted in liquidity problem.

In this study, how the changes in USA 10 year government bond rate affect currency value of countries particularly with high level of foreign debt is analyzed in 04.01.2002 – 10.12.2015 period with 3612 daily data. The countries with high foreign debt analyzed in this study are showed below table.

BRL	Brazil	MXN	Mexico
CLP	Chili	PHP	Philippines
COP	Colombia	PLN	Poland
CZK	Czech Republic	RON	Romania
HUF	Hungary	THB	Thailand
IDR	Indonesia	TRY	Turkey
INR	India	ZAR	South Africa
KRW	Korea		

Kurtosis and skewness are used to test the normality of the data. Skewness is how the data is distributed about the mean. Skewness is zero for the normally distributed data. Positive skewness means "skewed to right" while negative skewness means "skewed to left". Kurtosis measures how steep or flattened the data is. If Kurtosis is positive, the data is steep; while Kurtosis is negative the data is flattened. The changes in interest rates was observed as skewed to left and steep (positive skewness and kurtosis), analyzed countries' percentage change in currency was found as right skewed and steep (negative skewness and positive kurtosis). Jarque Berra test for normality revealed that both interest rates and changes in currency series were observed as not normally distributed.

In this study, stability analysis results suggested that one point change in 10 year treasury bond rates have negative effect on the exchange rates of all countries except for one. The effect is statistically significant at 5% and 1% significance level for Indonesia and other countries respectively. Therefore, FED interest rates increases one point and the other currencies lose value as a result. Since Thailand currency THB was found statistically insignificant, it was excluded from the study.

The effect of USA 10 year treasury bond rates on the value of currencies was analyzed through Kalman Filter Forecast Analysis. After 2008 crisis, central banks' precautionary policies became important especially FED's monetary policies. Since FED's announcement of tightening monetary policy, the funds from developing countries left the economy and economic problems occurred.

In this study, when the results were interpreted for fragile five (Turkey, Brazil, India, South Africa, Indonesia), it was concluded that these countries except for India (10th country) and Indonesia (14^{th} Country) are among top five. Brazil, South Africa and Turkey are the first, third and fourth most affected countries by the FED interest rates respectively. Another interesting result is that Mexico and Poland are among top five most effected countries while they are not in Fragile Five. Since 90% of net capital flow is though Brazil, China, India, Indonesia, Mexico, Peru, Poland and Turkey, the fact that these two countries are among five is not an interesting result. Moreover, the level of USA 10 year treasury bond rate's effect for 15 currencies were analyzed and fragile currencies or fragile economies were identified. Brazil, Mexico, South Africa, Turkey and Poland are among five. Based on that, Mexico and Poland should be among Fragile Five instead of India and Indonesia. It was showed that the empirical results of this study and fragility ranking differ from the "The Capital Freeze Index" prepared by The Economist.