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1 Introduction

An examination and close observation of currency exchange fluctuations in Iran reveals that over the years, problems and crises have occurred in connection with the exchange rate, which have brought about complications in the country's currency exchange market and hence the economy. Such problems and crises continue to exist today. The developments of the currency exchange crisis during the last few months provide clear proof for such contention.

Up until the late 90's, currency exchange restrictions and deficits in the balance of payments mainly due to low oil prices laid the ground for surges in foreign exchange rates in the free market. In the year 2000, owing to the improved situation of the foreign exchange market as a result of economic stability due increases in oil prices, the unified exchange rate policy was re-implemented after many years of a multi-rate regime. Over the past decade until Spring 2011, Iran's Central Bank, which channels more than 90 percent of hard currency into the local market, had employed a "managed float system" to support a single rate against hard currencies, whereby the Central Bank managed the market and pegged the rates to the target rates by relying upon its foreign currency reserves and buying and selling foreign currency in the free market.

In the 2000's, after the adoption of this policy, the official exchange rates (the foreign currency sold by the government in the interbank market) and the free market rates (e.g. at currency exchanges) were unified in practice and the slight difference between these two rates reflected the profit margin for the traders of foreign currencies in the free market.

Around mid-March 2011, however, due to the pressures caused by rising inflationary expectations created by considerable surges in the amount of liquidity, the targeted subsidy plan and growing international pressures on Iran because of its nuclear program, the tendency to arbitrage in the foreign currency market escalated and for the first time in 10 years, it led to a significant gap between the official interbank exchange rate and the free mark rate, creating polarity in the foreign exchange market. Today, the gap has widened more than a whopping amount of 1,000 tomans per dollar.

It should be noted that reviewing the developments of the foreign currency exchange rate over the years shows that many times, there has always coexisted a free market rate along with the official rate announced by the Central Bank. Hence, since a long time ago, the multi-currency regime has always dominated the country's economy and it is not limited only to the recent years or even months.

This further points to the fact that even in those years, the market suffered from instability. In addition to the developments related to the exchange rate, examining the trend of foreign exchange revenues indicate the fact that in spite of huge foreign exchange revenues mainly from oil exports, the Iranian economy has not witnessed any significant improvement in its economic indicators such as GDP growth. Therefore, not having enough economic growth in proportion to the amount of liquidity injected by the government in the economy, inflationary expectations have grown significantly and; therefore, stray capital has been trying to find refuge in other safe assets such as gold and foreign currency in order to safeguard its value. This is the main cause of surges in foreign currency rates in the past 17 months.

2 Factors Determining the Foreign Exchange Rate

The real exchange rate is an important concept in economics. It is a broad summary measure of the prices of one country's goods and services relative to those of another country or group of countries, and is thus an important consideration when analyzing macroeconomic conditions in economies.

A few factors determine exchange rates, and all are related to the relationship between the political and economic indicators of the home country and other countries. Among these factors are inflation, interest rates, political stability, public debt, current-account deficits, economic performance and the purchasing power parity.

For years the government and Central Bank of Iran have kept the toman (Iranian currency) overvalued compared to major currencies, in spite of high inflation and low interest rates. There is a direct connection between inflation and foreign exchange rates of the currency of a country. This is fundamentally succeeded via effects on purchasing power parity of the country.

Bearing in mind that the average inflation rate in Iran has been approximately 15% above the average dollar inflation rate in the past few years, and interest rates at times have become lower than the rate of inflation, one can conclude that the toman is grossly overvalued. Therefore, the demand for foreign currencies and gold has dramatically increased. With the resistance of the central bank to adjust the exchange rate, a widening spread has been created.

The following figures depict the data that were used to estimate the real exchange rate in Iran's market in this paper. All the data were obtained from available sources on IMF, Central Bank of Iran and other official websites.

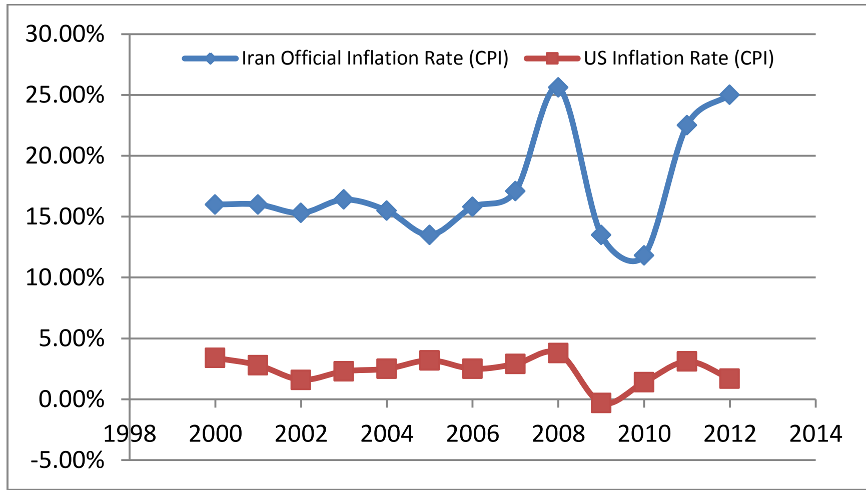

Figure 2-1: Iran's CPI (consumer inflation) and dollar's CPI (consumer inflation).

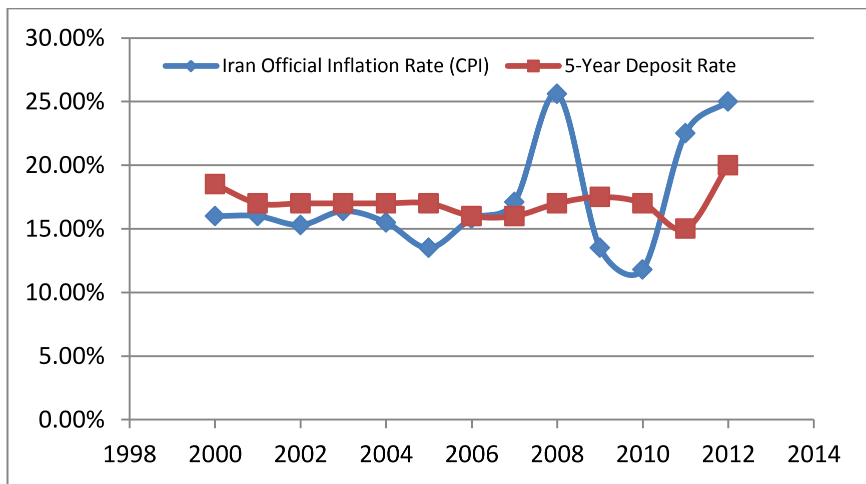

Figure 2-2: A comparison between Iran's CPI rate and the 5-year deposit rate.

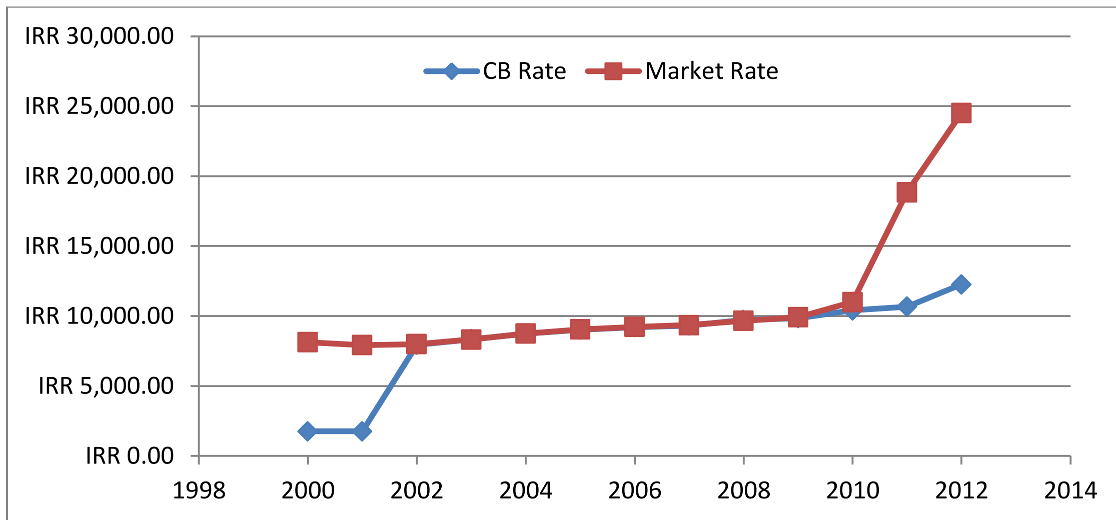

Figure 2-3: A comparison between the CB official dollar rate and the market rate.

3 Estimating the Real Currency Exchange Rate Based on Differentials in Inflation in Iran

In general, a country with a consistently lower inflation rate demonstrates a rising currency value, as its purchasing power increases relative to other currencies. Countries with higher inflation typically see depreciation in their currency in relation to other currencies.

To clarify the above premise, if a person deposits 1,000 tomans in a bank, and receives 20% interest over the year, the person has nominally earned 200 tomans. What the person really gets - the real rate of interest - depends on the rate of inflation as well. Let's assume the average inflation rate during the year was 15%, then the real rate of interest was only (20% − 15%) = 5%. The 1,000 tomans became 1,200 tomans, but goods and services costing 1,000 tomans a year ago now cost 1,150 tomans. In real terms the person has only made 5% of 1,000 tomans, or 50 or (1,200 – 1,150) tomans.

The nominal exchange rate between the toman and the dollar is simply the amount of dollars you can buy for each toman as dictated by the price in the foreign exchange market. To find the real exchange rate, it should be allowed for relative inflation rates in the two countries, where the price rises distort the picture.

As mentioned above, a real exchange rate between two countries is calculated as the product of the nominal exchange rate and relative price levels in each country. The real exchange rate between foreign country i and the home country at time *t* is:

$$Real\ Exchange\ Rate\ rer_{i,t} = e_{i,t} \times \frac{p_t}{p_{i,t}} \qquad (1)$$

where p is the price level of the home country, p_i is the price level in foreign country i, and e_i is the effective exchange rate between the currencies of foreign country i and the home country, expressed as the number of foreign currency units per home currency unit so that e_i rises with an appreciation of the home-country currency. The *Effective Exchange Rate* is the rate at which one currency will be exchanged for another at the beginning of the period adjusted for the effects of inflation.

Now, if the following assumptions are made during the period of 2003 and 2012, when the toman stabilized against the dollar after a correction in 2002, thus:

Iran' Price Level at the beginning of 2003 or $p_{Iran,2003} = 100$;

US's Price Level at the beginning of 2003 or $p_{US,2003} = 100$;

CPI in Iran in the period of 2003-2012 = Figure 2-1;

CPI in the US in the period of 2003-2012 = Figure 2-1.

Now the price level indices for the toman and the dollar are compounded in the period of 2003-2012, we have:

Iran's Price Level in 2012 or $p_{Iran,2012} = 466.0$;

US's Price Level in 2012 or $p_{US,2012} = 125.0$.

If the effective exchange rate is assumed 833.5 tomans in 2003, after the toman stabilized against the dollar in 2002, the real exchange rate is estimated:

$$Real\ (dollar/toman)\ exchange\ rate = 833.5 \times \frac{466.0}{125.0} = \mathbf{3,107.0}\ \boldsymbol{tomans}.$$

This result shows that based on differentials in inflation rates between the toman and the dollar, $1 should sell for **3,107.0** tomans today without considering any other risks and higher inflation expectations.

One should note that many Iranian economic experts believe that the CPI rates that are provided by the Central Bank of Iran underestimate the real inflation rates, in particular in the past four years. For reader's information, in recent years, inflation data provided by the Iranian Statistical Center, show higher rates. Therefore, it means that the real exchange rate could be higher than 3,107.0.

Just for the heck of it, if the rates of 1%, 2%, 3% and 4% are added to the 2009-2012 CPI rates, respectively, which is a credible assumption, the real dollar/toman exchange rate is obtained at **3,250.0 tomans**.

If the inflationary situation persists, say, for another 2 years, which is also very credible because of growing liquidity (it is close to 400 trillion tomans now with a growth rate of practically 27%

annually), and if CPI rates of 32% and 40% are assumed for the years 2013 and 2014, respectively, the real dollar/toman exchange rate will become close to **5,000.0 tomans**.

However, the above analysis does not suggest that these numbers will be certainly reached within the defined periods, because the market is subject to government and Central Bank manipulation.

Furthermore, other risks such as god forbid a military attack or high potential for a military attack would sky rocket the exchange rates much higher than the present rates.

At the time of this writing, the dollar/toman rate was loitering around 2,500 tomans, which means that the dollar has more room to go against the toman.

4 References

1. Reserve Bank of Australia Bulletin, "Measuring the Real Exchange Rate", November 2001.
2. Vesta Monitor Iran Economic Report, May 2012.

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