



## **Simple Measurement of Macroeconomic Imbalances and Currency depreciation in Emerging Countries**

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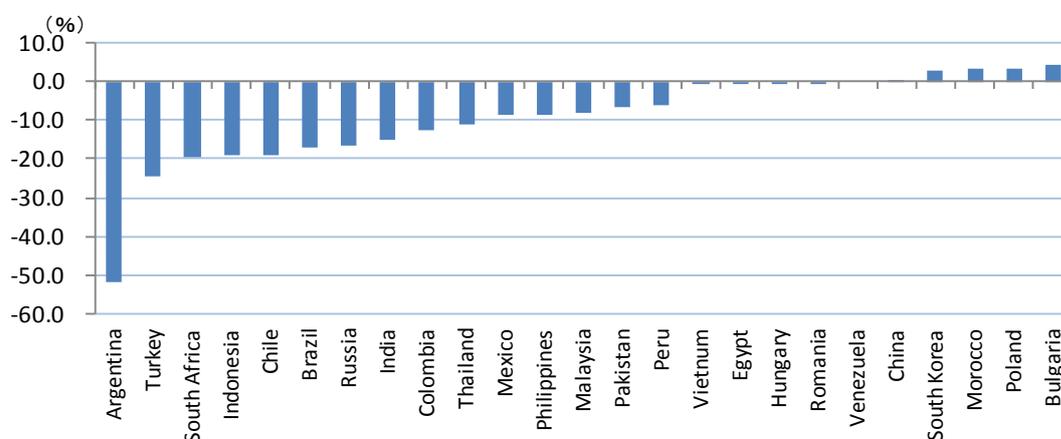
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### **Macroeconomic Imbalances watched by the Exchange Market Participants**

Currencies of emerging economies have been on a depreciating trend since May 2013, when Mr. Bernanke, the then chairman of the Board of the US Federal Reserve System, signaled a tapering of its accommodative monetary policy. The impact of his reference has spread to almost all emerging currencies, but the market participants have not sold all the currencies of emerging countries equally and the currencies are showing mixed responses. In Argentina, its currency has fallen more than 50% from the level in May 2013. Since the country has been faced with an inflation of 20-30% for the last three years or more, its currency may have to fall further rate. The country has many other distortions in its domestic economy.

Although not so significant as Argentina, Turkey and South Africa also are experiencing depreciation in their currencies in the order of around 20%. On the other hand, South Korea is enjoying some of the appreciation in its currency. What are the reasons for this wide difference of more than 50% in the maximum? To put the conclusion first, it seems to be because the imbalance of these countries is not a uniform one to all and the market participants are cool-headedly assessing each country's degree of imbalance.

**Chart 1 Changes in exchange rates against the US dollar (Since May,2013)**



(Source) Datastream

### **Simple way of measurement of macro-imbances**

Macroeconomic imbalances can be divided into two types of external one and domestic one. A typical indicator to measure the external imbalance is the current account balance. You can increase your consumption and investment with the help of foreign savings (capital) but there will be mounting debts to be paid back. In addition, in the case of developing countries, they have to repay them basically in the foreign currencies (hard currencies). You cannot indefinitely continue to depend on the borrowings, and the perpetual increase of the current account deficits is regarded as an evidence of the existence of external imbalance.

Next is the inflation rate. Differentials between foreign and domestic inflation rates play an important role in determining the price competitiveness of a country. If the inflation rate in a country accelerates more than in foreign countries, the country will face with a competitive disadvantage, and there will emerge higher possibility that the country will suffer from the increased current account deficits.

Theoretically, the inflation differentials between foreign and domestic rates should be used, but since the inflation rates in the advanced countries have generally shown extremely low rates, domestic inflation rates of emerging countries are used here to substitute the differentials. In concrete terms, the inflation rates are to be presented with minus sign<sup>1</sup> to ensure that the higher is the inflation rate the more strongly it functions as a depreciating factor on the currency of that country.

<sup>1</sup> Inflation rates multiplied by -1.

Fiscal deficits are used as an indicator to measure the internal (domestic) imbalance since the budget deficits tend to increase the public debts and there is a high possibility that the persistent accumulation of public debts will provoke an inflation or financial collapse of the national budget. In addition, emerging countries are often subsidizing the energy and foods to keep their prices low. In such a case, even if the face rate of inflation is low, the budget bears the inflation cost. In order to reveal the hidden inflation, we need to check the budget deficit.

We will call the combined indicator of the above three indicators (current account deficits, inflation differentials and fiscal deficits) as an “Imbalance index” . As this method is simply constructed, it has a merit that it can be applied to many countries.

**Table 1 Imbalance Index and change of exchange rates in selective emerging countries.**

	Current account balance (% of GDP)	Fiscal balance (% of GDP)	Inflation rate (in reverse sign, %)	<b>Imbalance Index</b>	Exchange rate (%)
Argentina	0.0	-1.3	-25.0	-26.3	-52.0
India	-3.8	-5.8	-10.1	-19.7	-15.1
Turkey	-7.3	-2.4	-8.0	-17.7	-24.3
South Africa	-4.2	-4.5	-5.0	-13.7	-19.6
Brazil	-2.2	-2.5	-5.7	-10.5	-17.1
Colombia	-3.1	-2.5	-3.0	-8.5	-12.4
Mexico	-0.8	-2.6	-3.9	-7.3	-8.8
Indonesia	-0.6	-1.1	-4.8	-6.6	-19.2
Peru	-2.6	0.8	-2.8	-4.7	-6.1
Thailand	1.3	-1.5	-3.4	-3.5	-11.0
Chile	-1.1	0.7	-2.6	-3.0	-18.9
Philippines	3.5	-2.6	-3.9	-3.0	-8.6
Russia	4.4	0.0	-6.8	-2.4	-16.7
South Korea	3.0	1.4	-3.1	1.4	2.8
Malaysia	9.5	-4.4	-2.2	3.0	-7.9

(Source) Datastream

(Note) Current account balance, Fiscal balance and Inflation rate are average of 2010 to 2012.

Exchange rate refers to changes from May 2013 to March 2014. Inflation rate for Argentina is based on estimate by a private institution.

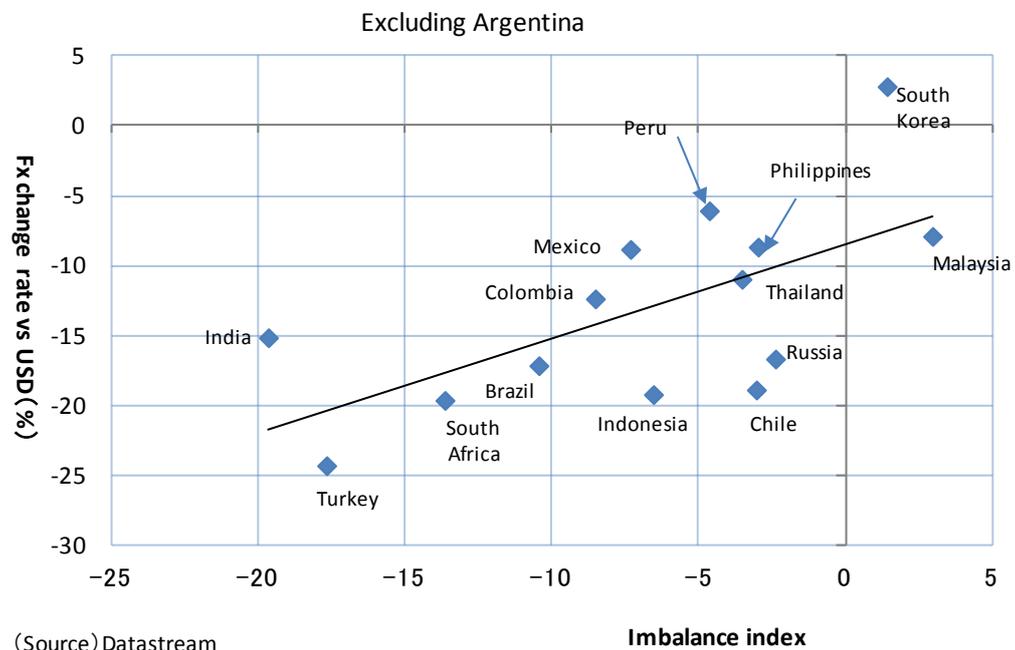
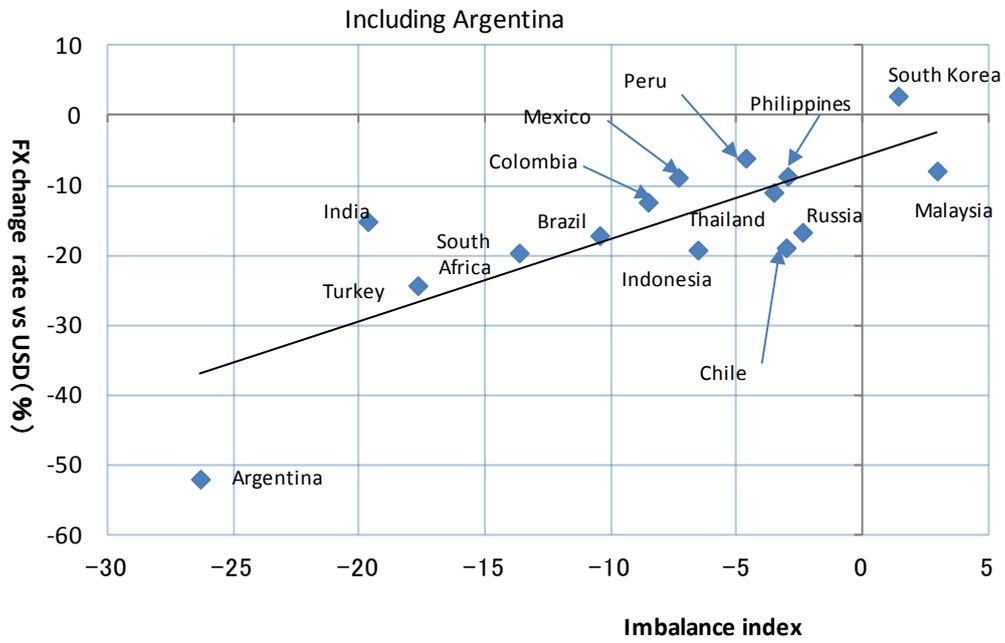
Chart 2 shows a scatter diagram with change in exchange rates since May 2013 on the vertical axis and imbalance index on the horizontal axis. The averages of 2010-2012, i.e., a recovery phase from the global crisis, are used for the three basic indicators. This is based on the assumption that the current exchange rates reflect the economic policies taken in the recovery phase after the crisis. The value of the coefficient of correlation between imbalance index and change in exchange rate is high at 0.72.

It should be noted, however, the inflation rate and depreciation of exchange rate for Argentina are extremely high, affecting the whole picture strongly. As Argentine has adopted a unique policy, it suggests that the figures should be regarded as a noise. Recalculation excluding Argentine still produced a coefficient of correlation of 0.63, which is still high enough. So we will exclude Argentine from the further analysis to be made.

The coefficient of correlation between each indicator and the change of exchange rate is 0.54 for current account balance, 0.54 for inflation rate (in reverse sign) and 0.31 for fiscal balance. The combined index of only current account balance and inflation rate produced a value of coefficient of correlation value of 0.62 for exchange rate, which means the change of exchange rates in this period can be well explained by these two factors.

What the chart 2 indicates is that the market participants have selectively sold the currencies of the countries which have a large current account deficit with high inflation rate. Those countries tend to have deteriorating competitiveness (resulting in an expanded current account deficit) and the expected tightening policy will dim the prospect of an early economic recovery. In addition, they have less room to take fiscal stimulus since the budget itself constitutes the inflation factors.

**Chart 2 Correlations between Imbalance Index and Exchange rates in other emerging countries**



(Source) Datastream

## **Oversold for Chilean Peso and Indonesian Rupiah? And Possibility of Overvaluation on Korean Won**

Looking at individual countries, Chile and Korea largely deviate from the trend line. Imbalance index for Chile is not so bad, and it suggests that the currency may be oversold. Korea is deviating upward in the chart. Judgment may be divided on whether the Korean won is overvalued or not, but there may be a possibility that the Korean economy will deteriorate and the won will depreciate if the present high won rate put a heavy burden on the economy. Peru and India also deviate upward, indicating the possibility that their currencies are overvalued.

Russia widely deviates downward, suggesting the influence of the current situation in Ukraine. Indonesia seems to be a little bit oversold. It may reflect as a discounting factor the uncertainties over the political events such as election of congressmen slated for in April and presidential election in July. Malaysia stays near the trend line as it has a notable current account surplus of 9.5% and low inflation rate of 2.2% , although its fiscal deficit is relatively large at -4.4%.

Turkey shows the worst imbalance index next to India, with its exchange rate depreciating the largest of all (excluding Argentina) by -24.3%. However, the adjustment is currently in progress and it seems to be somewhat overshooting. There is a possibility that the undervaluation will continue until the political risks are removed.

### **Other countries to be watched**

So far, we have reviewed the currencies of countries with floating exchange rate system. Let us examine the other countries with fixed exchange regime or managed floating system. In these countries, the changes in their exchange rates are small, but some countries may be accumulating the imbalances. Attention should be paid to such countries for the possibility of sudden devaluation of their currencies.

Venezuela has a very high inflation rate. Like Argentina, there is a strong government intervention into the economic activities and therefore imbalances have been accumulated. Sooner or later, a large devaluation of the currency may become necessary.

**Table 2 Imbalance Index and change in Exchange rates in other countries**

	Current account balance(% of GDP)	Fiscal balance(% of GDP)	Inflation rate (in reverse sign) (%)	Imbalance index	Exchange rate (%)
Venezuela	4.3	-8.2	-25.7	-29.6	0.0
Egypt	-2.3	-9.5	-9.2	-21.1	-0.4
Pakistan	-0.9	-6.5	-11.5	-18.9	-6.6
Vietnam	0.8	-3.7	-12.2	-15.2	-0.8
Morocco <sup>1</sup>	-7.5	-6.3	-1.1	-14.8	-0.8
Poland <sup>1</sup>	-4.6	-5.6	-3.6	-13.8	-0.8
Romania <sup>1</sup>	-4.0	-4.4	0.0	-8.4	-4.5
Bulgaria <sup>1</sup>	-1.0	-2.2	-3.2	-6.3	0.0
Hungary <sup>1</sup>	1.2	-0.7	-4.8	-4.3	-4.8
China	2.7	-0.4	-1.1	1.2	0.3

(Source) Datastream

(Notes) Current account balance , Fiscal account balance and Inflation rate are average of 2010 – 2012. Exchange rate is change of rates against USD from May 2013 to March 2014.

<sup>1</sup> Exchange rate is against EUR.

Egypt, Pakistan, Vietnam, Morocco and Poland have a large value in the imbalance index. It should be noted that Egypt, Pakistan, and Vietnam also have a high inflation rate and adverse effects of the imbalance have extended to the people's life, threatening for the political uncertainties.

The exchange rate of Romania has fallen by 4.5% and it seems the adjustment has been in the beginning to some extent. In Hungary the adjustment seems to be in good progress. China is in good condition. However, it should be noted that the figures for fiscal balance, not only for China but also for other countries, basically cover only the central government, with the local government excluded.

This imbalance index is simply constructed and it is usable to measure the imbalances in many emerging countries. When it is used in comparison with the change of the exchange rate, it will give you a rough indication to see which currencies are oversold or overbought.

Yet, this is only a rough indication. It may go without saying that as a next step

detailed analysis of the economic conditions of each country should follow to examine the reasons of its overselling or overbuying.

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