# Q&A ON THE NEW EFFECTIVE EXCHANGE RATE INDICES OF THE PHILIPPINE PESO

On 26 March 2013, the Bangko Sentral ng Pilipinas (BSP) released three new indices which measure the nominal and real effective exchange rates (EER) of the peso relative to the currencies of the following groups of countries: 1) all major trading partners of the Philippines covering merchandise exports and imports; 2) trading partners in advanced countries; and 3) trading partners in developing countries. The methodology used for calculating the new indices was also revised as the BSP shifted from arithmetic to geometric formulation and from base year to chained indices.

### *1. What is the EER index?*

The *EER index* is a measurement of the overall value of one country's currency against a basket of other currencies which could be useful in assessing monetary and financial conditions.

### *2. What is the difference between bilateral exchange rate and EER?*

An exchange rate involves a currency pair and measures the value of a country's currency in terms of another currency. The bilateral exchange rate of a country's currency varies across currencies and over time. For example, more pesos are needed to purchase one US dollar compared to that of one Malaysian ringgit, and in a given period of time, the bilateral exchange rates could change depending on the buying and selling rate of the peso versus the US dollar or the ringgit. An increase in the bilateral exchange rate (i.e., local currency against foreign currency) indicates depreciation while a decrease indicates appreciation.

Meanwhile, the *EER index* is an overall measure of the average nominal/real value of a country's currency across the currencies of its major trading partners taken together. It provides an indication of the net direction of a country's exchange rate against major trading partners. An increase in the EER means an overall appreciation of a currency relative to a basket of currencies while a decrease indicates an overall depreciation.

### *3. What are the types of effective exchange rates which the BSP uses?*

The BSP makes use of both nominal and real effective exchange rate indices:

- *Nominal effective exchange rate (NEER)* – is a weighted average of bilateral exchange rates with currencies of trading partners important to Philippine trade. It measures the net direction (i.e., appreciation or depreciation) of the peso's exchange rate relative to a basket of currencies at a given period. An increase in the NEER index would mean that, on average, fewer pesos are needed to purchase a unit of foreign currency while a decrease would mean otherwise.

- *Real effective exchange rate (REER)* – is a weighted average of inflation- or price-adjusted bilateral exchange rates with currencies of trading partners. It takes into account not only nominal exchange rate but also inflation differentials with trading partners, and is a measure of external price competitiveness. Unlike the NEER which measures increases or decreases on the value of the peso relative to the currencies of trading partners, the REER index measures the increases or decreases on the amount of goods which the peso could purchase in the international market. An increase in the REER means that the peso could buy more imported goods and services while foreign currencies could buy fewer Philippine exports. Conversely, a decrease in the REER index would yield the opposite results.

### *4. Why is there a need to revise the NEER and REER indices of the peso?*

There is a need to revise the NEER/REER indices of the peso to make it more reflective of current Philippine trade transactions and more accurate in terms of estimation methodology (i.e., in line with current practices in the calculation of exchange rate indices by international financial institutions and other central banks).

### 5. What are the revisions made on the NEER and REER indices of the peso?

While there are various aspects involved in the calculation of EER indices, the revision of the peso EER indices focuses on three aspects: (1) currencies included in the index; (2) average formulation; and (3) base periods for the exchange rates and weights, and the use of a chained index.

| Revisions | Purpose |
|---|---|
| Redefinition of currency composition of indices | Gives appropriate weight to important trading partner and competing countries that were previously not included, thus adding more relevant information |
| Shift from arithmetic mean to geometric mean | Removes the bias created by significantly depreciating currencies on the index |
| Use of chained indices | Eliminates the need for regular revision of the base year |

## 6. How were the existing indices redefined?

The three original NEER/REER indices which the BSP monitors were redefined to make these indices more current. The currencies selected were the major trading partners of the Philippines–countries which accounted for at least one percent share of the average total Philippine trade (exports and imports) in the past five years (2006-2010). The revised basket of currencies includes currencies of 14 countries/regions and covers about 95 percent of Philippine total trade: United States, Euro Area, Japan, Australia, China, Singapore, South Korea, Hong Kong, Malaysia, Taiwan, Indonesia, Saudi Arabia, United Arab Emirates, and Thailand. From the 14 countries included in the basket, two sub-groups were created, one for advanced economies and the other for developing and emerging economies.

**New Basket of Fourteen Currencies of Trading Partners**

| Advanced Countries | Developing and Emerging Markets | |
|---|---|---|
| USA | China | Singapore |
| Euro Area | Hong Kong | South Korea |
| Japan | Indonesia | Taiwan |
| Australia | Malaysia | Thailand |
| | Saudi Arabia | United Arab Emirates |

Based on the new basket of currencies, the following three new types of NEER and REER indices were formulated to match the country's group of trading partners:

The *Trading Partners Index (TPI)* measures the average nominal and real effective exchange rates of the peso across the currencies of the 14 major trading partners of the Philippines identified above. If one considers the bilateral exchange rate of the peso with each of the 14 currencies, the peso could appreciate against one currency but depreciate or hold steady with respect to another currency. The TPI is an overall measure of the average value of the peso across all fourteen currencies taken together. It provides an indication of the net direction of the peso's exchange rate against major trading partners.

The second index is the *Trading Partners Index- Advanced Countries (TPI-A)*. This index measures the effective exchange rates of the peso across currencies of trading partners in advanced countries comprising of the United States, Japan, Euro Area and Australia. The TPI-A provides information on the value of the peso against currencies in highly industrialized economies.

The third index is the *Trading Partners-Developing Countries (TPI-D)*. This index measures the effective exchange rates of the peso across 10 currencies of partner developing economies —China, Singapore, South Korea, Hong Kong, Malaysia, Taiwan, Indonesia, Saudi Arabia, United Arab Emirates, and Thailand. The TPI-D measures the value of the peso relative to the currencies of developing countries.

The TPI, TPI-A and TPI-D replaced the old NEER/REER indices: 1) Majors index which consists of the same set of countries as the TPI-A except that in lieu of Australia, the United Kingdom was included; 2) Broad index consists of all the currencies in the TPI-D basket except China, Saudi Arabia, and United Arab Emirates; and 3) Narrow index measures the peso's average exchange rate vis-à-vis three developing countries– Indonesia, Malaysia, and Thailand–all of which are also included in the TPI-D.

| Old NEER/REER Indices | New NEER/REER Indices | |
|---|---|---|
| Major Trading Partners index | TPI-Advanced | TPI (Overall) |
| Euro | Euro | |
| Japanese Yen | Japanese Yen | |
| US Dollar | US Dollar | |
| UK Pound | Australian Dollar | |
| Broad Competing Countries index | TPI-Developing | |
| Hong Kong Dollar | Hong Kong Dollar | |
| Indonesian Rupiah | Indonesian Rupiah | |
| Malaysian Ringgit | Malaysian Ringgit | |
| South Korean Won | South Korean Won | |
| Singaporean Dollar | Singaporean Dollar | |
| Taiwan Dollar | Taiwan Dollar | |
| Thai Baht | Thai Baht | |
| | Saudi Arabia Riyal | |
| Narrow Competing Countries index | United Arab Emirates Dirham | |
| Indonesian Rupiah | Chinese Renminbi | |
| Malaysian Ringgit | | |
| Thai Baht | | |

**7. What is the rationale for the shift from arithmetic to geometric mean?**

The old indices are computed using the weighted arithmetic average of changes in bilateral exchange rates relative to a base period (i.e., December 1980). The weights are the respective trading partner's merchandise trade share (exports and imports) to total Philippine trade. An inherent weakness of the arithmetic mean is that it gives more weight to depreciating currencies. If the currencies in the basket are generally moving in the same direction, then this is not a problem. But if there is a currency that is depreciating considerably, this would introduce an upward bias to the index, even if the weight of the currency is small.

For example, the Indonesian rupiah experienced significant depreciation in 1998 as a result of the Asian financial crisis causing the NEER/REER indices of the peso to go up

even if the peso was not appreciating significantly relative to the other currencies in the basket.

Thus, the shift from arithmetic to geometric mean, which gives symmetrical treatment to depreciations and appreciations of foreign currencies (i.e., neither is given a greater weight), would remove the bias created by continually depreciating currencies in the index.

**8. How does the adoption of chained indices eliminate the need for base period?**

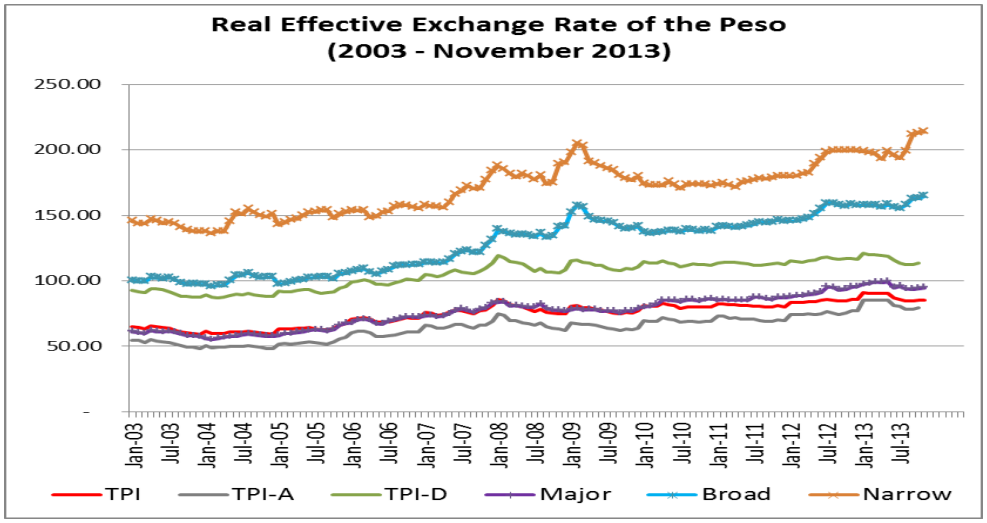
There are two base periods relevant in the formulation of an EER index: base period for weights and base period (or reference period) for exchange rates. However, depending on the formula used, EERs are sensitive to changes in either the base period for weights or the base period for exchange rate.

The BSP makes use of varying weights to reflect changes occurring in trade – total trade shares (exports and imports) data of the previous year (e.g., using 2008 trade data for the 2009 indices). However, there is a problem of attribution in using varying weights across time as the change in the EER indices may be due to the changes in exchange rates or weights. Nevertheless, updating weights periodically would be more effective in reflecting changes occurring in trade.

Meanwhile, EER indices reflect changes in bilateral exchange rate relative to the exchange rate in a given base period or reference period. The norm is for the reference period to reflect both external equilibrium (close to trade balance) and internal equilibrium (with low unemployment, low inflation, and solid GDP growth), but fulfilling these criteria is difficult. Before the revision, the base period of BSP's EER indices is 1980 not because the year was one of equilibrium but because it was the year the BSP started to publish the indices.

To deal with these base year issues, the BSP shifted from using base periods to using chained indices. A chained index links exchange rates and weights on a year-to-year basis, making use of varying weights. Exchange rates for a particular period are compared with the exchange rates of the previous period. Thus, reference period varies from year to year thereby eliminating the need to change base year of the exchange rate. There is no base year in the sense of a benchmark against which the performance of an index is measured, only a chained base year (i.e., 1980) with a value of 100. Hence, it would be possible to rescale to another year.

## 9. How did the peso perform on a real trade-weighted basis?




Both the new and old indices showed that the peso had depreciated in real terms in 2003 and 2004 against major trading partners. Based on the TPI, the effective exchange rate value of the peso reached a low in 2004 at 60.5 percent relative to its real effective exchange rate value in 1980. From 2005 onwards, the REER showed an appreciating trend due to the combined impact of the peso's nominal appreciation and higher inflation differential in the Philippines relative to those of the country's trading partners.

In 2013[1], the peso appreciated in real terms to reach 87.8 percent, compared to its value in 1980. In the past ten years, the peso's real effective exchange rate has increased by an annual average of 2.5 percent. Although the peso's real appreciation could have an effect on the economy's competitiveness, this was mitigated by the series of economic, financial, and fiscal reforms which have all served to strengthen the country's economic fundamentals.

Comparing the new and old REER trends, the TPI-A has slightly lower figures for the REER due to the higher inflation rates in the additional country (i.e., Australia) relative to the *Major* index (where United Kingdom was excluded).

Meanwhile, the TPI-D with a broader basket of currencies and reflecting year-on-year cumulative changes show that the increases in the REER was lower/more gradual compared to what is being depicted by the *Broad* index. In addition, the chained formulation, which links year-to-year data, tends to moderate the impact of extreme data. Indeed, differences between the new and old indices are due to the inclusion of new currencies and the change to chained geometric formulation.

[1] REER for 2013 reflects data from January to November only.

**10. When will the BSP use the new NEER and REER indices?**

The new indices were computed in parallel with the old series until the end of 2013. Starting 2014, the new indices will henceforth be the official effective exchange rate indices of the BSP.