

*The Nominal Effective Exchange Rate for the Thai baht:
Calculation methodology and latest revision
by the Bank of Thailand*

The Nominal Effective Exchange Rate (NEER) reflects movements of the Thai baht relative to other currencies. The NEER is often used to analyze the country's price competitiveness and the impact of exchange rate movements on the overall economy. The calculation methodology of the NEER requires the following considerations.

1. **Choice of currencies in the basket.** The BOT selects currencies of countries that are important to Thailand's international trade, namely (1) trading partners whose exports or imports (excluding oil) with Thailand constitute more than one per cent of total Thai exports or imports, (2) countries with the potential to be Thailand's key competitors in third-country markets, and (3) countries that represent important economic regions.

2. **Product coverage.** The BOT employs international trade figures that cover only goods, not services, in the calculation because (1) the value of trade in goods already constitutes more than 90 per cent of Thailand's total trade; and (2) data on services are not readily available. Including services in the NEER calculation for all countries could result in an incomplete and inaccurate dataset for the calculation and thus compromise the ability of the NEER to reflect the true price competitiveness of the Thai economy.

3. **Methodology in calculating currency weights.** The NEER is constructed to serve as an indicator of the country's price competitiveness. As such, the weight attached to each trading partner or competitor (country k) reflects the competitiveness of Thai products with respect to that particular country in the following dimensions: (1) competition in the domestic market (import competition) whereby home products compete with imports from country k ; (2) competition in country k 's market (bilateral export competition) whereby Thai exports to country k compete with local products; and (3) competition between products of Thailand and country k in a third-country market (country j) as reflected by the share of Thai exports to market j and importance of country k 's products for market j .

The importance of country k to Thailand as a trading partner and competitor, or country k 's trade weight (w_k), can be calculated as follows:

$$W_k = \lambda^m MW_k + \lambda^x \delta^{BX} BXW_k + \lambda^x \delta^{TX} TXW_k$$

where MW_k , BXW_k and TXW_k are the importance of country k to Thai products as a competitor in the domestic market, the country k 's market, and the third market, respectively. Parameters λ^m and λ^x reflect the relative importance of import and export competition while δ^{BX} and δ^{TX} denote the relative importance between bilateral and third-market export competition, respectively.

The weights obtained from the above expression are then used to compute the NEER index as a geometric mean based on the formula $NEER_t = \prod_k FX_{k,t}^{w_k}$ where $FX_{k,t}$ is the bilateral exchange rate of country k with respect to the baht at time t .

During the past decade, particularly after China joined the World Trade Organization, the global and Thai trade structures have continuously evolved. As a consequence, the BOT recently revised the currency basket, as to which currencies to include in the basket as well as the weight assigned to each of them, so that the index best represents current trade dynamics and true price competitiveness.

In the latest revision of the index, the BOT updated the database from 2002 to 2007. Moreover, the BOT utilized expenditure-based gross domestic product data to calculate the share of consumption in domestic production^{1/}. This results in more accurate estimates of λ and δ compared with the previous estimation that was based on of the values assumed by the Federal Reserve.

Comparison of currencies and countries in NEER calculation

Subject	Previous index	New index
Year of trade database	2002	2007
Number of currencies	21	23
Number of countries	32 (12 countries adopted the euro)	38 (16 countries adopted the euro)
Share of total trade	83.0	84.8

Under the new basket, the number of currencies has increased from 21 to 23 while the number of countries has increased from 32 to 38 mostly owing to the greater number of countries using the euro. Moreover, the weight of the Chinese renminbi increased while that of the US dollar declined in line with recent developments in trade patterns. Nevertheless, despite the changing weight structure, the calculation cannot completely capture re-exporting in regional trade flows. For example, the high value of Thailand's trade with China can be attributed to the fact that a large portion of Chinese imports are re-exported to serve final demand in G-3. As a consequence, the weight placed on China as Thailand's trading partner may appear to be high relative to the weight on G-3 although, in reality, some Thai products are ultimately destined to G-3. The ability of the NEER to signal competitiveness, therefore, could be limited by these inaccuracies.

Furthermore, the index needs to be cautiously used and interpreted since trade data are an aggregate of all product categories. For some partners or competitors, a high trade volume may not necessarily imply intense competition as the products traded could differ. In addition, the exchange-rate sensitivity of different products could vary, possibly limiting the ability of the index to accurately measure overall competitiveness.

Going forward, the BOT will apply this newly constructed basket of currencies as well as their weights in the calculation of nominal and real effective exchange rates from January 2005 to December 2011 and additionally update the base year to 2007 in line with the trade data. Moreover, from 2011 onwards, the BOT will revise the currency basket and trade weights annually (using trade data with a two-year lag)^{2/} so that the index incorporates the changing structure of trade.

^{1/} Alternatively, the International Monetary Fund utilizes data from the production side, i.e., the Input-Output. The summation of λ^m and λ^x is unity, as is the summation of δ^{BX} and δ^{FX}

^{2/} As trade statistics are released with a two-year lag, calculation of the NEER can only be revised once actual data are available.