

## METHODOLOGICAL EXPLANATION<sup>1</sup>

Nominal effective exchange rate (NEER) is the weighted average value of Turkish lira relative to a basket of currencies of Turkey's major trade partners. The weights are determined by using bilateral trade flows. Real effective exchange rate (REER) adjusts the nominal effective exchange rate for the effects of relative prices.

REER released by the Central Bank of Turkey (CBT), is computed as the weighted geometric average of the prices in Turkey relative to the prices of its principal trade partners in international markets. The real effective exchange rate can be formulated as follows:

$$REER = \prod_{i=1}^N \left[ \frac{P_{TUR}}{P_i * e_{i,TUR}} \right]^{w_i}$$

where,

$w_i$ , is country  $i$ 's weight in Turkey's REER index

$P_{TUR}$ , is the price index in Turkey

$P_i$ , is the price index in country  $i$

$e_{i,TUR}$ , is the nominal exchange rate of country  $i$  in terms of Turkish Lira (TL), and

$N$ , is the number of countries included in the analysis

An increase in the REER represents an appreciation of the TL in real terms, denoting a rise in the value of Turkish commodities in terms of foreign commodities.

Methodologies followed by the European Central Bank and Bank of International Settlements are adopted in the REER computation of the CBT, including 36 countries and 2006-2008 period manufacturing trade data. In addition to the Consumer (CPI) and Producer Price Index (PPI) based indexes, Unit Labor Cost (ULC) based real effective exchange rate index is produced. The CPI based REER index is also computed separately for developed and developing partner countries.<sup>2</sup> The number of countries used to calculate the various REER indexes vary depending on data availability. 36 countries are included in the calculation of the

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<sup>1</sup> For detailed information see: Saygılı, H., Saygılı, M. and Yılmaz, G. (2010). Türkiye için Yeni Reel Efektif Döviz Kuru Endeksleri (New Real Effective Exchange Rate Indexes for Turkey). CBT Working Paper No: 10/12 <http://www.tcmb.gov.tr/research/discus/2010/WP1012.pdf>

<sup>2</sup> 2009 IMF classification is used for grouping 36 countries according to their development level. Developed countries: Germany, Italy, U.S.A, France, U.K., Spain, Belgium, Netherlands, Japan, Korea, Sweden, Austria, Switzerland, Taiwan, Greece, Czech Republic, Israel, Finland, Denmark, Ireland, Slovakia, and Portugal. Developing countries: China, Russia, Romania, Poland, India, Hungary, Bulgaria, Thailand, Kazakhstan, Iran, Saudi Arabia, Indonesia, Malaysia, and Egypt.

CPI based REER, whereas 31 and 20 countries' trade weights are used in forming the PPI and ULC based REER indexes, respectively. In accordance with the new CPI series, the starting date of REER indexes is set as January 2003.

Data sources are as follows:

- CPI and PPI
  - CBT Electronic Data Delivery System (CBT EDDS)
  - International Financial Statistics (IMF IFS)
  - For Taiwan CPI data, International Labor Organization database
- Exchange Rates (monthly averages of nominal exchange rates)
  - CBT EDDS
  - IMF IFS (For pre-April 2009, IMF IFS database is used for Czech Republic, Poland, Hungary, Bulgaria, Romania, Malaysia, Russia, Kazakhstan, Thailand, Iran, China, Indonesia, Egypt and India. Figures are converted to TL).
  - Oanda ([www.oanda.com](http://www.oanda.com)) (For Taiwan dollar exchange rates, figures are converted to TL)
  - Eurostat (For Pre-2001 Greece and pre-2009 Slovak Republic generic euro rates)
- Unit Labor Cost indexes (seasonally adjusted)
  - OECD Olisnet<sup>3</sup>
- Bilateral Trade (SITC 5-8)
  - UN Comtrade
  - Taiwan Bureau of Foreign Trade<sup>4</sup>  
(<http://cus93.trade.gov.tw/ENGLISH/FSCE/>)
- GDP and Manufacturing Production
  - World Bank Development Indicators
  - OECD Olisnet (For countries not available on World Bank database)
  - Taiwan Council for Economic Planning and Development  
(<http://www.cepd.gov.tw>)

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<sup>3</sup> Data for Turkey is available on OECD Olisnet until 2006. For later periods, quarterly "Manufacturing Production Index" from CBT EDDS and "Manufacturing Industry Gross Wage Index" from Turkish Statistics (TURKSTAT) are used to extend the ULC series. "Nominal Unit Wage" is calculated by dividing the wage index by the production index. To be compatible with OECD data, seasonally adjusted ULC index for the post first quarter of 2007 is expanded by using the year on year increase in the generated nominal unit wage index.

<sup>4</sup> Bilateral aggregate exports and imports data are available. The ratio of manufacturing trade is determined by using World Trade Organization database.