



REAL EFFECTIVE EXCHANGE RATE (REER) ON THE BASIS OF UNIT LABOUR COSTS IN ESA 95 METHODOLOGY AND ON THE BASIS OF SELECTED PRICE DEFLATORS

Ing. Peter Belovič, National Bank of Slovakia

The aim of this article is to present the calculation of REER values on the basis of unit labour costs (ULC) in ESA 95 methodology. The new variant of calculating REER has expanded the existing set of REER calculations made at the NBS on the basis of various price and cost deflators. At the same time it fulfils the condition of compatibility with data reported by the main international institutions (European Commission, ECB, OECD, IMF). The calculation of REER on the basis of ULC in ESA 95 methodology is to replace the method previously used at the NBS for calculating REER with the use of available, though methodologically non-homogenous, ULC.

The NBS is planning to evaluate in its monetary development situation reports as of 2005 the development of ULC on a quarterly basis in ESA 95 methodology and also the development of REER on the basis of this indicator.

In the introductory part above there was stated the comparison of REER development on the basis of the previously used ULC¹ and on the basis of ULC gained from the ECB database according to ESA 95 methodology. Subsequently, comparison is mentioned of REER development on the basis of ULC for variously defined groups of trading partners of the SR. The second part of this article provides a summary overview of REER development on the basis of various price deflators.

The degree of variation in calculating REER is based on the choice of the number of trading partners included, on the choice of weightings used, price or cost deflator used and on the choice of the starting period, i.e. the base. As regards the number of trading partners included, the individual REER variants considered are, for the purpose of monitoring the Slovak economy's competitiveness, sufficiently representative.

The share of the nine largest trading partners of Slovakia (the Czech Republic, Germany, Austria, Italy, France, Holland, Great Britain, the USA and Switzerland) has been relatively stable over the long term, and in the years 1993 – 2003 formed in total approximately 65 – 70% of

Slovakia's total foreign trade. Through the influence of the gradual reorientation towards advanced European countries the internal structure of the group has been changing. The most significant change has been the growth in Germany's share to the cost of that of the Czech Republic's. Since 1998 Germany has been the largest trading partner to the SR (28%) and the Czech Republic has been the second largest trading partner (14%).

By expanding the group of Slovakia's trading partners to include other large European countries (Poland, Hungary, the Ukraine and Turkey) and representatives of the Asian market (China and Japan) a group of 15 countries is formed, the total share of which in 1993 represented approximately 77% of the total turnover and over the following years has fluctuated around the level of 76 to 81%².

The weightings used on the basis of a representative's share in SR foreign trade in the period chosen³ are normalised for the selected group of trading partners and unchanged over the course of the whole calculation peri-

¹ ULC indices are available largely on a quarterly basis. Japan reports also monthly ULC. ULC data published for individual countries are not fully mutually consistent as they are calculated for sectors delimited according to varying definitions, for example "the overall economy", "industry" (including, excluding construction, or all industry, processing industry) and the indicator "employment" (the average number in the workforce – employees in the economy, in the civil sector). In REER recalculations on the ULC basis significant simplifications have been necessary, bypassing the absence of input data. Data consistent in the full extent (for the same sector on the same basis) were not available for all the trading partners considered.

² Nor had the shares of both groups of trading partners changed in 2004, as reported by the available data of the SR Statistics Office on the foreign trade of Slovakia for nine months (following the enlargement of the EU to include the ten new member states in May 2004 the share of the other EU member states in Slovakia's foreign trade represented approximately 79%).

³ In selecting weightings we give preference to the trading partner's share in the foreign trade of the SR above that of the currency structure of foreign trade. The chosen weightings are subsequently used in evaluating the influence of a change in the trading partner's price level. For example, the Czech Republic is one of the SR's most important trading partners, though the share of CZK in SR turnover is low and does not fully express the significance of the trading relationship with the SR.



od (international methodology verified through use). In the calculations presented, the weightings used are derived from the territorial structure of the SR's foreign trade (turnover) in 1999.

Comparison of REER development on the ULC basis

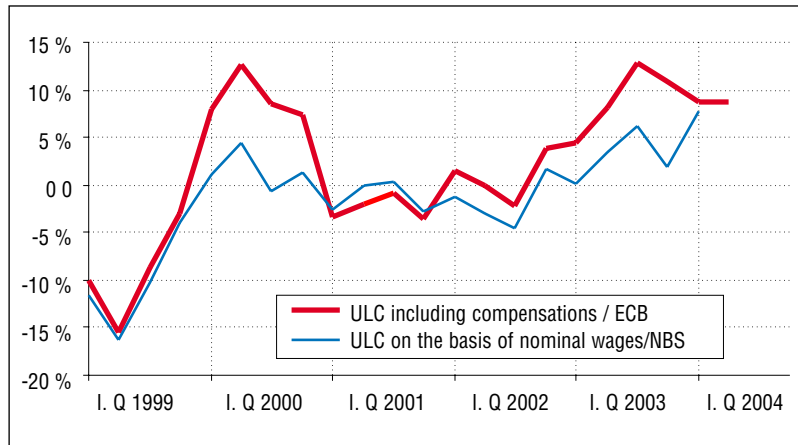
The availability of unit labour cost (ULC) indices is limited; different countries use different national methods and monitor the indicator in various periodicities. Until July 2004 calculations of REER made by the NBS were on the basis of ULC expressed as the proportion of the volume of wages paid to employees (the number of employees multiplied by the average nominal wage) to the GDP created at constant prices per employee. This cost indicator included within it the growth in wage costs in relation to the growth in labour productivity, thereby differing from the ULC in ESA 95, which include all compensations to employees (including social contributions, etc.) and at the same time labour productivity is derived from a statistical survey of the number of employees in contrast to employment according to ESA 95 methodology. The REER calculations presented are on a quarterly basis for the group of 9 countries, or respectively for the narrower groups of 8 representatives (excluding the Czech Republic), or 2 representatives (the former currency basket of the SKK) and 1 representative (the eurozone).

In 2004 the Statistics Office SR began to publish the ULC index for Slovakia (as the proportion of compensations per employees at current prices to labour productivity per worker at constant prices). In this regard the new index (in graph 1 ULC including compensations / ECB) in the REER calculation replaced the original ULC SR indices (in graph 1 ULC on the basis of nominal wages / NBS). At the same time ULC indices from the ECB database were adopted for selected trading partners (where, the practice had previously been to take these from national databases, or calculated from countries' individual data and which were not in ESA 95 methodology). It needs to be emphasised that the development of the new

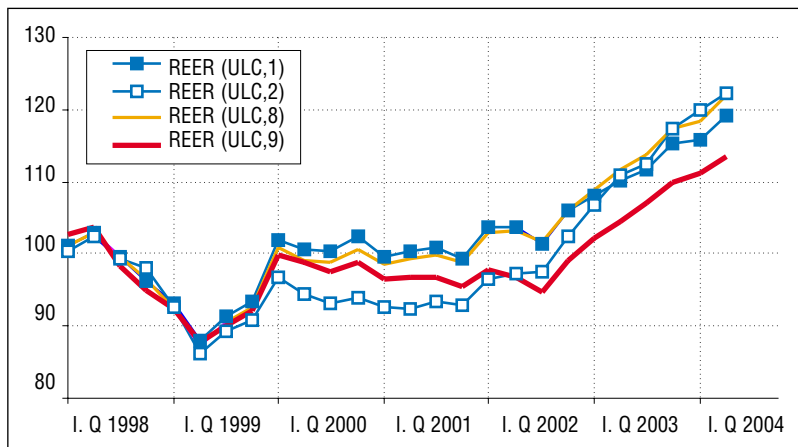
ULC SR index differs significantly from the original; over the period 1996-2004 the difference between their year-on-year changes moved from -5 to +7 percentage points, which is subsequently shown also in the differing development of REER on the basis of these indicators.

Graph 2, showing the development of REER on the ULC basis in ESA 95 methodology, documents that in the

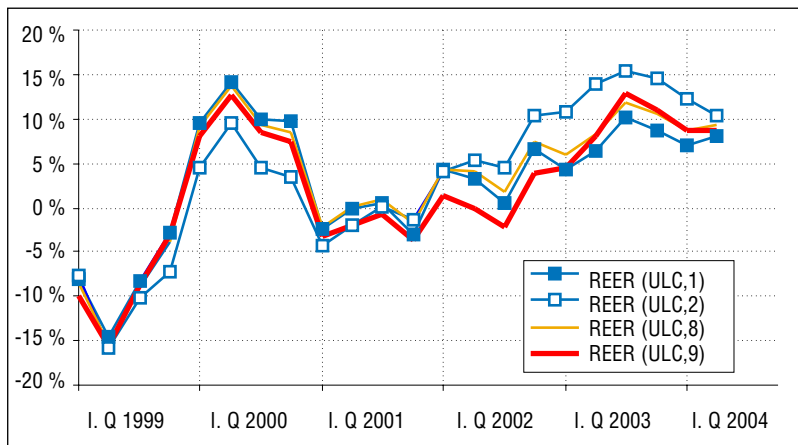
Graph 1 Year-on-year changes in REER index
(total on ULC basis – overall economy, for 9 partners, 1998 = 100)



Graph 2 Development of REER index (on ULC basis, for 1 to 9 partners)



Graph 3 Year-on-year development of REER index (on ULC basis, for 1 to 9 partners)





years 1998 and 1999 the REER fell, which was a consequence of the rapid weakening of the exchange rate and not primarily of the ULC's development itself. In 2000 and the REER stabilised and subsequently in 2002 the overall trend of REER development changed towards one of appreciation.

The year-on-year change in the REER for the broadest group of selected countries, i.e. for the variant with the lowest appreciation of the REER index, similarly confirms this trend of appreciation. 2003 to 2004 saw REER growth move considerably, between the levels 4.5 to 12.9% (graph 3).

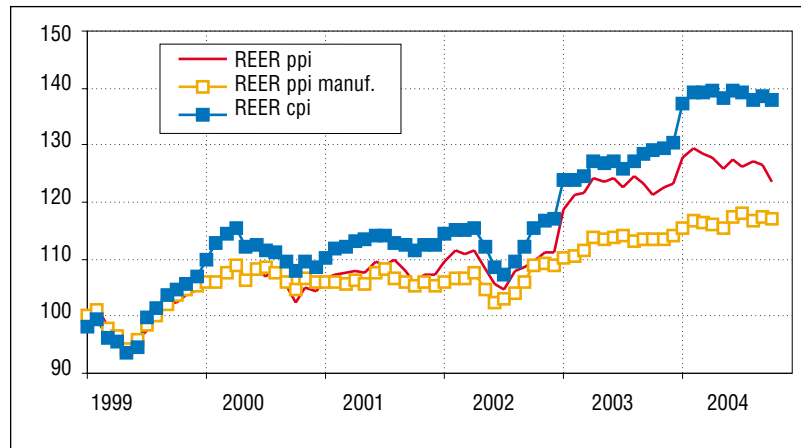
The appreciation of the REER index on the ULC basis in ESA 95 methodology in comparison with 1999 being taken as the base year corresponds with the rate of REER's appreciation on the basis of the producer price index and also the REER on the basis of the industrial products price index (see Cumulative in the table). Calculations of REER on the basis of the various deflators give an interval in which the development of price competitiveness of domestic production should move.

Variants of REER on the basis of various price deflators and a comparison of results

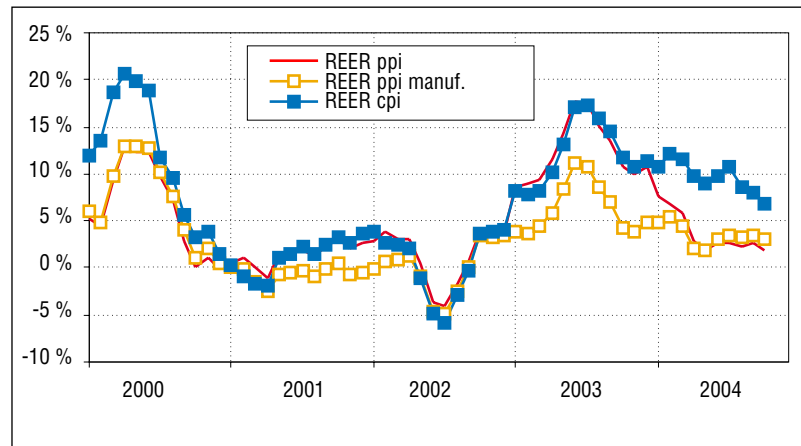
The choice of a price or cost deflator in calculating the REER is important, since it cardinally determines the interpretation of results. Besides ULC, those deflators most frequently used include consumer prices indices (CPI) and producer prices indices (PPI). Each index has its advantages and disadvantages, though it is the purpose for which the price or cost deflator is to be used that is important.

The highest real appreciation of the REER is currently shown in using the CPI index (roughly 40 points against a base level average for 1999=100), which is clearly connected with the significant extent of price deregulation in the preceding years (graphs 4 and 5). It is inappropriate to use this index for monitoring the development of the exchange rate and domestic price level on the competitiveness of

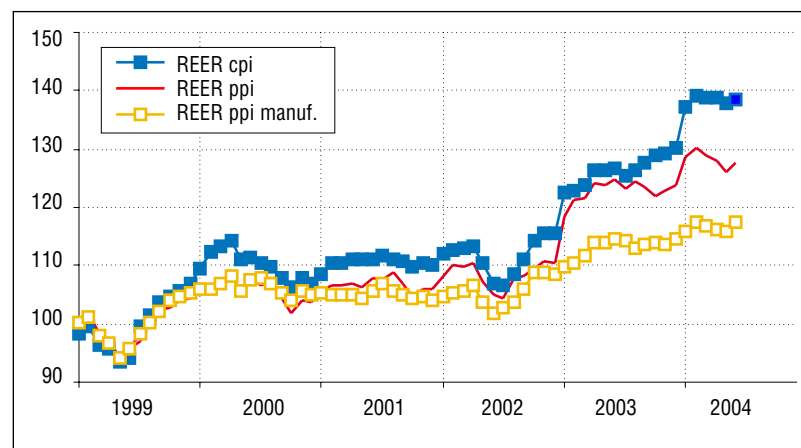
Graph 4 Development of REER index (on CPI, PPI, PPI manuf. basis, for 9 trading partners)



Graph 5 Year-on-year development of REER index (on CPI, PPI, PPI manuf. basis, for 9 trading partners, in %)



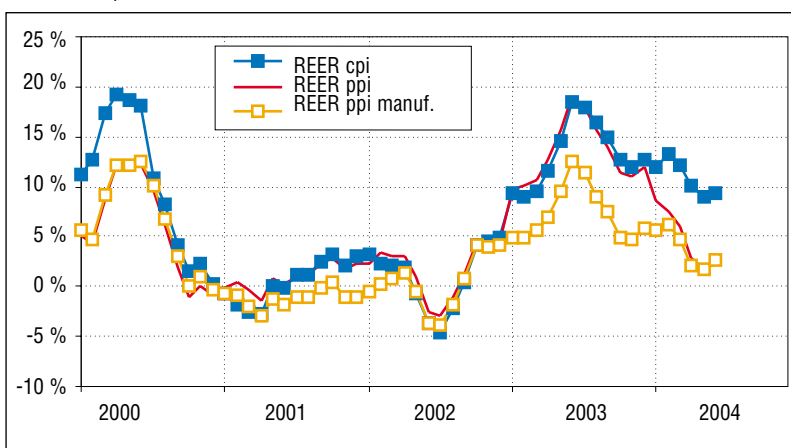
Graph 6 Development of REER index (for 15 trading partners)



Slovak output in foreign markets, but shows better the degree of convergence of the Slovak price level. This index (alongside REER on a ULC basis) is used also by the ECB in its assessments and analyses.



Graph 7 Year-on-year development of REER index (for 15 trading partners, in %)



In using producer price indices the REER appreciation is lower: in the case of the PPI index it is roughly 10 points lower and in the case of the manufactured articles prices index (PPI manuf.) it is more than 25 points.

The use of a deflator based on a producer prices more accurately reflects possible development, or pressures for development in the competitiveness of Slovak producers. With regard to the fact that the increasing of regulated prices has been directly a component of the producer price index (representing 33% of the weighting for electricity, gas and water production sectors), it was primarily in 2003 appropriate to use the PPI manuf. index for measuring competitiveness, where the movements of regulated prices had already been directly reflected in the resultant production prices of industrial producers. With regard to the minimal increases in regu-

lated prices made in 2004, the gap between year-on-year changes in REER on the basis of PPI and PPI manuf. narrowed.

The rate of REER appreciation for the expanded group of 15 countries has since 1999 been roughly equal to that of the narrower group of 9 countries. The cumulative appreciation of REER on the CPI basis moves around a level of 40 points, in the case of PPI 30 points, and in the case of PPI manuf. 15 points (graphs 6 and 7).

While using the broader group of countries means an increase in the share of the 15 trading partners in the

total foreign trade turnover of the SR (by roughly 11 percentage points, i.e. from 65 – 70% to 76 – 81%), this does not actually yield any significantly different REER results from those for the narrower group of 9 countries. It can be seen in the table, from the comparison of REER indices for both groups of countries, that expanding the group of trading partners by 6 countries influences the year-on-year changes by approximately -0.8 to +1.7 percentage points.

The REER on the ULC index basis for the period January 1999 to June 2004 shows a cumulative rate of appreciation, roughly 20 and 4 percentage points lower than the REER on a CPI and PPI basis respectively, but approx. 6 percentage points higher than on the PPI manuf. basis.

Table: Year-on-year changes in REER indices on the basis of various deflators (for 9 and 15 trading partners, on the basis of base year 1999 = 100), from average indices for the year, (and 1st half of 2004), in %

-(depreciation) + (appreciation of the index)							
REER on the basis of	CPI (9 countries)	PPI (9 countries)	PPI manuf. (9 countries)	ULC (9 countries)	CPI (15 countries)	PPI (15 countries)	PPI manuf. (15 countries)
2000	11.3	6.3	6.9	9.1	10.1	5.7	6.3
2001	1.1	1.4	-0.6	-2.4	0.4	0.9	-1.1
2002	0.6	1.3	-0.0	0.7	1.0	1.7	0.4
2003	12.1	12.3	6.3	9.1	13.2	13.3	7.2
Average 2000/2003	6.3	5.3	3.1	4.1	6.2	5.4	3.2
2004 *	9.3	4.1	3.2	6.1	10.9	4.8	3.8
Cumulative**	42.1	26.7	17.1	22.9	40.9	26.7	17.2

* Data are for 6 months of the year, or the 1st and 2nd quarters of 2004.

** Cumulative changes from the start of 1999 (from January, or from the 1st quarter of 1999 in the case of ULC)