

ANNEX 3. Overview of the litas effective exchange rate indicators

Introduction

When exchange rates are used to analyse the international competitiveness of the country, usually effective exchange rate — the indicator describing the change of the bilateral exchange rates — is analysed. It is calculated by weighing the country's bilateral exchange rates against the currencies of trading partners by importance of these trading partners. The nominal effective exchange rate (NEER) is the exchange rate index that shows the change of the value of the currency and is calculated as the weighted geometric average of bilateral exchange rates. It is used to calculate the real effective exchange rate (REER) which includes not only the developments of the country's exchange rate, but also of the prices or labour costs, compared with the developments in trading partners, so it is the indicator of the price or cost competitiveness.

The common perception is that during the period of rapid economic growth the Lithuanian export competitiveness has deteriorated a lot, since the country's price and cost indicators were growing more than those of its trading partners. With low unemployment and limited labour supply, firms found it difficult to find employees needed, so wages rose markedly, while consumer prices increased rapidly fuelled not only by external factors (trends in global commodity markets) but also by domestic demand.

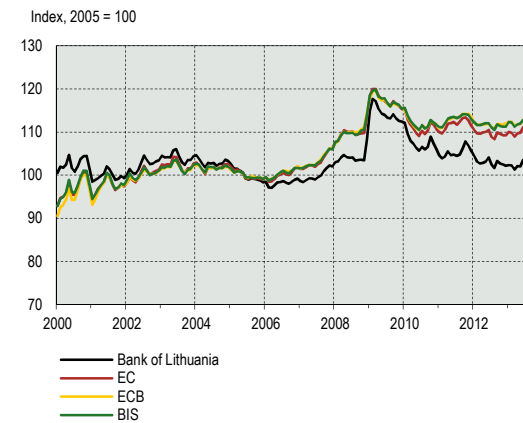
Litas REER indicators published by different institutions (the EC, the ECB, the BIS, and the Bank of Lithuania) based on consumer prices, actually increased during the period of rapid economic growth (see Chart A). In the midst of an economic boom, since the beginning of 2007 till the end of 2008, the litas REER¹⁵ determined by international institutions increased by nearly a tenth. In terms of a longer period of economic boom, it is clear that, for example, from the beginning of 2000 till the end of 2008, the litas REER based on consumer prices rose by as much as 25 per cent.

The price and cost competitiveness can be analysed using not only the REER based on consumer prices. REER could be calculated also by applying other indicators: unit labour costs, the GDP deflator, deflator of exports of goods and services, producer prices etc.¹⁶ Litas REER indicators calculated using other deflators than the consumer prices, were growing during the economic boom, too. Since the beginning of 2000 to the maximum values achieved in 2008 or 2009, they have grown by more than one-third, especially the indicator based on the export deflator rose (over 40%). The litas REER based on unit labour costs in manufacturing stood out — it increased by only slightly more than one-fifth (see Table A).

Significant litas REER growth during the period of rapid economic expansion could have had a significant impact on the overall competitiveness of the country, for example, it could limit the growth of country market shares in key trading partners. However, this did not happen: Lithuanian exports share in the global market has been consistently growing during the economic upturn, and increased most notably in 2008, the year highly problematic in terms of price and cost competitiveness. When asked, why the market shares grew, while the price and cost competitiveness indicators were deteriorating, the answer is difficult. Apparently, the explanation could be that market share changes are related not only to the change of price and cost competitiveness indicators. There are non-price factors that may significantly increase the export market share even when REER indicators represent an extremely disadvantageous situation. Such factors include an active search for new markets, manufacture of new products, manufacturers' reputation, product quality, customer tastes etc. Incentives not attributable to prices also include structural factors (specialisation by products and markets, technology, and influence of institutions) and external demand trends. Thus, in order to evaluate international competitiveness, it is not enough to examine only the REER indicator — its analysis should be only one part of the study.

Part of the country's price and cost competitiveness loss during the economic boom later, during the crisis, was offset by favourable changes — the decreasing litas REER. Compared with the largest litas REER values, cost competitiveness improved while the changes of price competitiveness were smaller. Especially evident is the drop of the litas REER based on unit labour costs in manufacturing — from its largest value acquired in the first quarter of 2008 till mid-2013 (the latest

Chart A. Litas REER based on consumer prices using the biggest number of trading partners, published by different institutions



Sources: EC, ECB, BIS, Bank of Lithuania and Bank of Lithuania calculations.

¹⁵ Due to differences in the methods used, the litas NEER and REER indicators by the Bank of Lithuania and their changes significantly differ from the indicators calculated by international institutions.

¹⁶ But for the group covering the highest number of trading partners, which also includes Russia — a particularly important trading partner for Lithuania, the REER is calculated only according to consumer prices. The REER is calculated according to other indicators only for narrower groups, from which Russia and some other emerging market economies are excluded. Therefore, in comparisons of the litas REER indicators, calculated with different deflators (see Chart B and Table A), REER based on consumer prices is also presented compared with the currencies of the narrower group.

data available) this indicator fell by almost a fifth. The litas REER based on the unit labour costs in the total economy from the highest value up to now has fallen by more than 10 per cent.

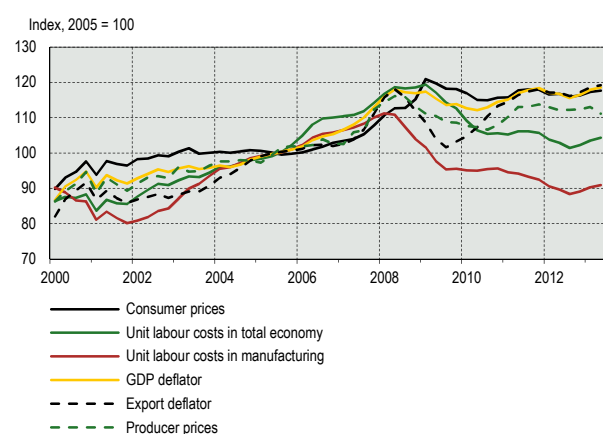
Evaluation of the entire period — from the beginning of 2000 to mid-2013 — shows that litas REER based on prices have increased more than those based on costs (see table A). The REER calculated on the basis of unit labour costs in manufacturing remained almost unchanged — in the middle of 2013 it was nearly the same as in the beginning of 2000. The REER calculated on the basis of unit labour costs in the total economy rose by a fifth.

Methodological aspects of the litas REER indicators

This annex analyses the litas REER indicators based on consumer prices and unit labour costs (for the total economy and only for manufacturing). Consumer price data are of good quality, it is methodologically easy to compare data across countries, they are promptly published in both developed and emerging market economies, and very few revisions are made to them later, therefore REER indicators based on consumer prices can be a useful and prompt tool to estimate the change of price competitiveness. Labour costs usually make a significant part of the business costs, therefore the unit labour costs are also a suitable deflator. The economic activity most relevant to competitiveness is manufacturing, so the unit labour cost indicator of this economic activity can be used for the REER calculations. However, REER calculation according to unit labour costs means higher REER variability and revisions — it is related to the specifics of compensation of employees and other statistics used.

Litas REER indicators calculated using the GDP deflator are not examined separately in this annex because their dynamics is similar to the changes of REER indicators based on the consumer prices (see Chart B). Meanwhile, REER indicators calculated using the export deflator or producer prices, are not very suitable for the Lithuanian competitiveness analysis, as the export deflator and producer prices in our country are greatly influenced by the changes of petroleum product prices related not to competitiveness but to the global commodity markets.

Chart B. Litas REER calculated using different deflators



Sources: EC, ECB and Bank of Lithuania calculations.

Note: the presented REER indicators (with the exception of the indicator based on producer prices) are published by the EC. Data of 37 industrial economies are included in the calculations. The REER based on producer prices is published by the ECB. A total of 21 countries and the euro area region are included in the calculations.

Table A. Changes of litas REER calculated using different deflators

Deflator	Percentage	Change from 2000 to the maximum value of the indicator in 2008–2009	Change from that maximum value till the second quarter of 2013	Change during the entire period in question (from 2000 to the second quarter of 2013)
Consumer prices (the largest group of countries)		27.0 (Q1 2009)	-7.9	17.0
Consumer prices		34.5 (Q1 2009)	-2.7	31.0
Unit labour costs:				
in the total economy		38.2 (Q1 2009)	-12.6	20.7
in manufacturing		23.3 (Q1 2008)	-18.2	0.8
GDP deflator		35.9 (Q2 2008)	0.6	36.7
Producer prices		34.6 (Q2 2008)	-4.3	28.8
Export deflator		44.0 (Q2 2008)	0.9	45.3

Sources: EC, ECB and Bank of Lithuania calculations.

Note: the presented REER indicators (with the exception of the indicator based on producer prices) are published by the EC. Data of 37 industrial economies are included in the calculations. The REER based on producer prices is published by the ECB. A total of 21 countries and the euro area region are included in the calculations. Data on the REER calculated with consumer prices, comprising the largest group of countries, are presented for comparison.

The REER indicators can be calculated using not only various price indicators but also a different number of foreign trading partners. Institutions make groups of countries according to their needs and the quality of available statistical data. International institutions¹⁷ distinguish the narrow and broad groups of trading partners, where the narrow group includes less and the broad group includes more countries. As more than a quarter of the total Lithuanian exports of goods accounts for the exports to the CIS countries, while examining the situation in Lithuania it is best to analyse the REER indicators of the broad group because, as mentioned above, international institutions include Russia only in the calculation for this group. Other Lithuanian foreign trading partners from the CIS are excluded from the country lists made by the international institutions for the calculation of the REER.

¹⁷ In the litas REER calculated by the Bank of Lithuania the composition of trading partners is not constant: the countries included and their number may vary on a quarterly basis.

Lithuanian price competitiveness situation as seen from the REER indicators of the narrower group of countries, is different than that determined from the indicators of the broadest coverage country group (see Chart C). Comparing the litas REER indicators calculated using a different number of trading partners, it is clear that their change was very similar to mid-2009, but then differed significantly for about a year. The litas REER compared with the currencies of the broad country group, fell by about 7 per cent — more than the litas REER compared to the currencies of various narrower groups of countries (the euro area, the EU, 37 industrial countries). This means that during the crisis Lithuania regained much higher share of price competitiveness lost during the economic boom, if calculated according to the indicators of the broad country group. Subsequently, the indicators of all groups varied little, thus bigger decrease in a single year since mid-2009 means a better current price competitiveness position, in comparison, for example, to the average of 2005.

Seeing that the trends of change of the REER indicators published by different international institutions are very similar, in some cases it was decided to analyse only the REER, published by the EC. In their calculations, each euro area country is included separately (each is assigned a separate weight and inflation of each is taken into account), rather than as a single region.¹⁸ Moreover, the EC-calculated indicators include not the trade of produced goods, but the trade of all goods and, therefore, trade in agricultural products, which is an important Lithuanian foreign trade component.

Overview of the litas REER based on consumer prices

As mentioned before, since the beginning of 2000 until now the litas REER based on consumer prices rose significantly, but its change was not one-way — this period saw both the indicator upward and downward movement as well as stabilisation periods (see Chart A). Therefore, five periods are distinguished. Upon calculation of the change of the indicators published by the analysed institutions, it is determined how much the litas NEER and the REER based on consumer prices have changed during each period (see Table B). It turns out that, for example, from the start of 2000 to the start of 2004 the litas REER was growing, i.e. the Lithuanian price competitiveness was declining. During those four years, the litas REER increased by about one-tenth. This is three times less than the increase of the litas NEER. The REER increased less as the impact of the growing NEER was suppressed by slower rise in consumer prices compared to the country's trading partners.

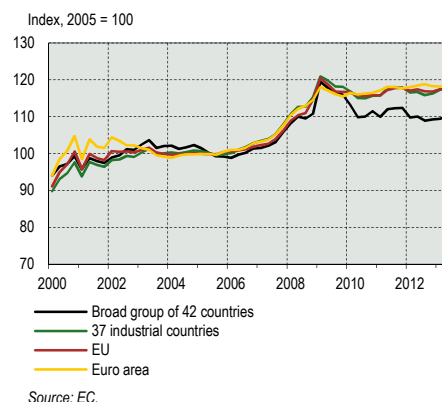
Table B. Changes of litas NEER and REER based on consumer prices, calculated using the largest number of trading partners

Percentage	2000-01– 2004-01	2004-01– 2007-01	2007-01– 2008-11	2008-11– 2010-06	2010-06– 2013-06
REER indicators					
Bank of Lithuania	4.0	-5.7	4.9	2.1	-2.0
EC	10.8	-1.4	8.2	-0.6	1.8
ECB	13.0	-0.7	9.3	-0.5	2.2
BIS	10.6	-1.0	8.8	-0.1	2.1
Average of institutions	9.6	-2.2	7.8	0.2	1.0
NEER indicators					
Bank of Lithuania	32.9	-2.5	1.0	0.2	8.1
EC	31.8	-1.4	1.6	-2.4	1.9
ECB	28.7	-2.5	0.4	-2.7	1.1
BIS	28.0	-2.5	0.5	-2.8	1.3
Average of institutions	30.3	-2.2	0.9	-1.9	3.1

Sources: EC, ECB, BIS, Bank of Lithuania and Bank of Lithuania calculations.

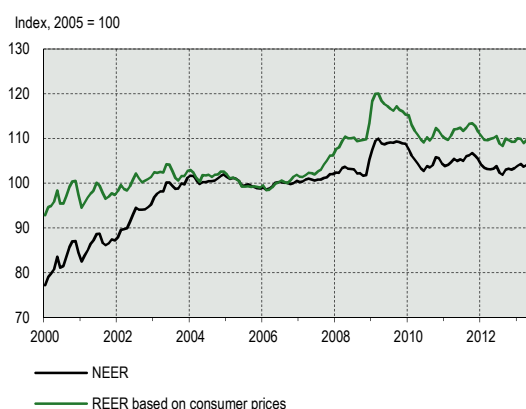
Later, from the start of 2004 to the start of 2007, the litas NEER and the REER remained virtually unchanged (see Chart D). Similar developments of the NEER and the REER are related to the consumer prices in Lithuania changing almost at the same pace as that of its trading partners. The situation changed in the beginning of 2007, and until November 2008 inclusively the NEER and REER trends were different: while the NEER almost stagnated, the REER increased by nearly a tenth during this period. Thus, the loss of price competitiveness in this period is most closely associated with the rapid growth of consumer prices in Lithuania rather than changing nominal exchange rates. In 2007 and 2008 inflation in Lithuania was particularly high (average annual inflation was 5.8% and 11.1% respectively). Although it was highly fuelled by the rapid growth of the global prices of food and energy commodities, domestic demand

Chart C. Litās REER based on consumer prices, published by the EC, compared to the currencies of a different number of trading partners



Source: EC.

Chart D. The EC-published litās NEER and REER based on consumer prices, calculated using the largest number of trading partners



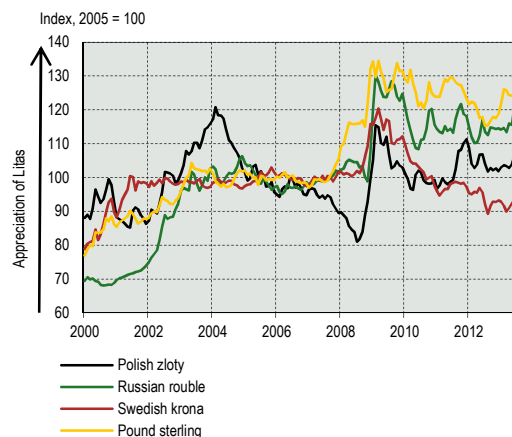
Source: EC.

¹⁸ The ECB and the BIS treats the euro area as a single region and does not assign weights to individual countries.

also had an impact. With its developments more related prices for industrial goods and market services were rapidly rising: the average annual core inflation showing their growth accounted for 6.3 per cent in 2008.

Unlike in 2007–2008, when the price competitiveness was changing because of the inflation differential from the inflation in trading partners unfavourable to Lithuania, during the period from the end of 2008 till mid 2010 high REER fluctuations were mainly caused by the changes of nominal exchange rates. During all this period the REER almost did not change. However, by breaking down the period, certain differences become apparent. First, the REER went up very sharply, and then fell down not so sharp, but by a similar amount (see Chart D). In the end of 2008 and in the beginning of 2009 the litas NEER rose by about 8 per cent (this is the average of the NEER changes published by different institutions) and was at this level till the end of 2009 when the reverse process began: in half a year, the NEER decreased by about 5 per cent, and approached the level before the sudden rise. Sharp rise of the NEER in early 2009 is related to the fact that the bilateral nominal litas exchange rate became stronger in relation to currencies of foreign trading partners with floating exchange rates, for instance the Polish zloty, the Russian ruble, the Swedish crown and the British pound sterling (see Chart E). Compared to November 2008, in March 2009 the price of litas against each of these currencies rose by at least 10 per cent, and in particular in respect of the Polish zloty and the Russian ruble (by 24% and 30%, respectively).

Chart E. Developments of the litas exchange rate, expressed in the currencies of the countries having a floating exchange rate



Sources: Eurostat and Bank of Lithuania calculations.

Since the middle of 2010 the litas REER had no clear trend: the average change of the indicators, published by the institutions, during this period is minor. The developments of the NEER and the REER were similar during this period.

Since the beginning of 2000 till mid-2013 the NEER increased by about 30 per cent, and the REER based on consumer prices by about one-fifth. These are the averages of changes in NEER and REER, published by international institutions. Indicators calculated by the Bank of Lithuania were highly different from those of international institutions: according to the data of the Bank of Lithuania, during the entire period the REER rose just by 3 per cent while the NEER — by as much as 50 per cent.

The lower rise of the REER compared to the NEER during the entire period means that the negative impact of nominal exchange rates was offset by favourable developments of the relative consumer prices. In fact, this trend is true only for the period up to 2004. Later, as mentioned, the REER and the NEER was roughly stable for several years, while in the period since the start of 2007 both the NEER and the REER rose, the latter more so. Thus, since the beginning of 2007, Lithuania's price competitiveness was reduced by the trends of nominal exchange rates as well as of consumer prices.

Overview of the litas REER based on unit labour costs

It is useful to examine the trends in the litas REER calculated based on unit labour costs. As mentioned above, the REER compared with the currencies in the broad group of countries is calculated only using the consumer price indicators, therefore, it is not possible to analyse the cost competitiveness with Russia included. Thus, the narrower scope of indicators is used for the analysis of cost competitiveness, i.e. the EC-calculated indices covering 37 industrial countries.

Two years since the beginning of 2000 are exceptional. Although at the time the litas NEER grew, favourable differential in the developments of unit labour costs in Lithuania compared with trading partners led to the fact that REER, calculated using the total economy unit labour costs, remained fairly stable, while the REER calculated on the basis of unit labour costs in manufacturing even declined (see Chart F).

However later, for six years until the start of 2008, REER indicators calculated based on the labour cost only deteriorated: the REER calculated on the basis of unit labour costs in the total economy, as the REER calculated on the basis of unit labour costs only in manufacturing grew by more than a third. For the first two years of this period, until the beginning of 2004, the growth was mainly due to the rising NEER, but then the latter stabilised, and the REER increased due to unfavourable differential in unit labour costs in Lithuania. With particularly rapid economic growth in Lithuania, these costs increased faster than in trading partners. Compared to the last quarter of 2003, in the second quarter of 2008 the REER based on unit labour costs in the total economy grew by a quarter and the REER based on unit labour costs in manufacturing — less (by one-fifth). This indicates that the developments in unit labour costs in manufacturing — exporting and, hence, the most related with the competitiveness industry sector — has been more favourable than in the total economy. In manufacturing and in agriculture — in the tradable sector activities — productivity increased more rapidly than in other activities (see Chart G), which allowed the unit labour costs to grow more slowly.

Chart F. EC-published litas NEER and REER (based on unit labour costs), calculated relative to 37 industrial countries currencies

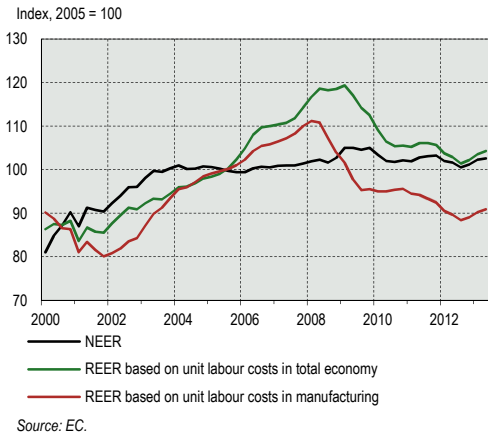
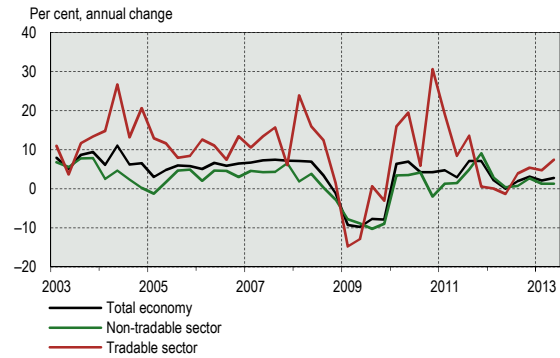


Chart G. Labour productivity in the total economy and its sectors



Sources: Statistics Lithuania and Bank of Lithuania calculations.

Note: data until the first quarter of 2010 are recalculated based on the 2011 Population and Housing Census data. Agriculture (A) and manufacturing (C) compose the tradable sector.

In the beginning of the economic downturn (in the end of 2008 and the beginning of 2009), the REER based on unit labour costs began to decline rapidly, and fell by more than a tenth within about a year and a half. This decrease was not due to changes in the nominal exchange rates but due to unit labour costs that declined in both the total economy and manufacturing. After the end of the economic downturn, the REER indicator, calculated on the basis of unit labour costs in the total economy, had no clear trend of change, and its variations were significantly related to the NEER developments. However, the REER based on unit labour costs in manufacturing was declining for almost another two years, i.e. from 2011 by the end of 2012, reflecting the increased cost competitiveness of manufacturing.