EURO AREA EXCHANGE RATE-BASED COMPETITIVENESS INDICATORS: A COMPARISON OF METHODOLOGIES AND EMPIRICAL RESULTS

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ABSTRACT

In light of the increasing policy relevance of competitiveness indicators, this paper provides an overview of different methodological approaches used by various international organisations for calculating effective exchange rate indices based on trade weights. In particular, the paper discusses the trading partners considered in these indices, the weighting procedure, the trade basis, patterns and updating of trade weights, and the choice of deflators. In addition, the paper highlights quantitative differences and similarities among the indices calculated by different institutions. In particular, exchange rate-based competitiveness indicators as computed by different institutions may not always deliver the same policy messages.

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1 INTRODUCTION

Real effective exchange rates (REERs) are often used as measures of international price and cost competitiveness. They capture broad macroeconomic developments in the exchange rate and prices or costs and provide a comprehensive assessment of the international pressures on domestic firms over the medium term in respect of costs or prices. However, REERs do not include any firm-level data nor do they explicitly reveal factors relating to non-price competitiveness (such as product quality and reputation). The high relevance of the real effective exchange rate as a measure of competitiveness is also reflected by its inclusion in the scoreboard of the EU Macroeconomic Imbalance Procedure adopted in December 2011 (see European Commission, 2012).

The following dimensions shape REER indicators:

- Type of trade to be used as a basis of weights
- Group of trading partners
- Trade weight computations
- Frequency of updating of trade weights
- Choice of deflators in order to calculate price and cost competitiveness

REERs as calculated by various international organisations and central banks exhibit many similarities in their methodology, but also some differences. In this paper, we analyse REERs as calculated by the Bank for International Settlements (BIS), the European Central Bank (ECB), the European Commission (EC) and the International Monetary Fund (IMF). We complement the analysis of these indicators by performing some simulations where we construct effective exchange rates with specific characteristics in order to highlight the quantitative impact of certain methodological features.

The remainder of the paper is organised as follows. Section 2 compares the methodological approaches in calculating REERs focusing on trade weights and deflators. In Section 3, we present differences between various indicators and identify some of their drivers. Section 4 concludes.

2 OVERVIEW OF METHODOLOGIES

Real effective exchange rates serve as indicators of international price and cost competitiveness. The REER of the euro is calculated as the geometric weighted average of bilateral nominal exchange rates which are deflated using relative price or cost measures:

$$REER^t = \prod_{i=1}^{N} \left(\frac{d_{euro}^t e_{i,euro}^t}{d_i^t} \right)^{w_i} \tag{1}$$

where N stands for the number of competitor countries in the reference group of trading partners, $e_{i,euro}^t$ is an index of the average exchange rate of the currency of partner country i vis-à-vis the euro in period t, d_{euro}^t and d_i^t are, respectively, the deflators for the euro area and partner country i, and w_i is the trade weight assigned to the currency of trading partner i.[2] In the remainder of Section 2, we discuss how trade weights are calculated by different institutions and which set of deflators are used.

2.1 TRADE BASIS

In general, manufactured goods, commodities and services are the main trade flow categories. However, most of the available EERs are calculated on the basis of trade in manufactured goods as classified in Sections 5 to 8 of the Standard International Trade Classification (SITC). There are several reasons for choosing manufacturing trade. First, for most countries it accounts for the largest part of total trade in goods and services. For example for the euro area, manufactured goods had a share of about 61% of total exports and 49% of total imports of goods and services in 2009. Second, it is generally deemed being most responsive to developments in competitiveness. In addition, high quality bilateral data are available for a broad set of countries.

Commodities, on the other hand, are usually considered to be homogeneous goods whose prices are determined in global markets without being influenced by the competitiveness of individual countries. Indeed, including trade in agricultural or mining products may distort the competitiveness analysis, because these goods are often heavily regulated or subsidised. Data coverage on trade in services is less complete compared to manufacturing

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[2] Schmitz et al. (2012) provide details on how the effective exchange rates of the euro are computed.

trade data.[3] As a consequence, the ECB's weighting scheme does not reflect patterns of trade in agricultural products, raw materials, energy products or services.

Table 1 shows which type of trade is included in the weighting schemes of different institutions. Besides the ECB (Schmitz et al., 2012) and the BIS (Klau and Fung, 2006), also the IMF (Bayoumi et al., 2005) uses manufactured goods as basis for the calculation of a narrow index vis-à-vis 26 trading partners. The IMF's broad index, vis-à-vis 184 trading partners, is also based on trade in commodities and services. However, services are effectively included only for those countries with a high incidence of tourism in the total trade; otherwise, the same bilateral weights for a country as for trade in manufactured goods is applied. The European Commission (2012) calculates EERs based on total trade in goods (hence including both manufacturing products and commodities).

Table 1: Overview of type of trade

Institution	ECB	European Commission	BIS	IMF	
Trade basis	Manufactured goods (SITC 5-8)	Total goods	Manufactured goods (SITC 5-8)	Manufactured goods (SITC 5-8)	Manufactured goods (SITC 5-8), commodities (overall weight in global markets), and services (same bilateral weights as manufacturing except for countries where tourism is important)

2.2 TRADING PARTNERS

The different indicators offer a variety of trading partner composition. It is noticeable that for most institutions two groups of countries serve as the basis for EERs: a narrow group, covering mainly industrialised economies, and a broader group, including also emerging economies. The distinction is often necessary owing to the lack of long time series for data both on trade and on deflators.

Table 2 shows − by differentiating between four groupings of countries − which partner countries are included in the narrow and broad indices of different institutions: first, non-European countries that represent the major trading partners; second, EU countries that

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[3] Schmitz (2012) computes experimental EERs based on trade in services for the ECB's EER-20 group (details are presented in Section 3.3).

have not joined the euro area; third, non-EU countries that have lower trade weights with the euro area; and finally, euro area member states. It is worth noticing that:

- Among the major trading partners and non-euro area EU countries, the broad compositions (B61, EER-40, IC41, published by the BIS, ECB and EC, respectively), are rather homogeneous, with the exception that the ECB EER-40 group does not include single euro area Member States, while these are counted individually in the B61 and IC41;[4] however, Singapore is missing in the EC's indicator.

- The BIS and ECB's broad EERs also include a wide range of smaller trading partners (with a very similar coverage of countries), while EC indicators do not account for those.

- Narrow groups of trading partners (B27, EER-20, IC36) are more diverse. The BIS indicator excludes some major non-EU trading partners such as China, most of the EU countries (not belonging to the euro area), and part of the euro area Member States. As the EER-20 of the ECB, the B27 indicator does not include Turkey, while the IC36 does. However the latter excludes China, Hong Kong, South Korea and Singapore. The ECB EER-20 group does not comprise Mexico and New Zealand which are however included in the B27 and IC36 indices.

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[4] Individual euro area Member States are included in the same group for the so-called Harmonised Competitiveness Indicators (HCIs) of individual euro area Member States as explained in Section 2.4.

Table 2: Overview of groups of trading partners

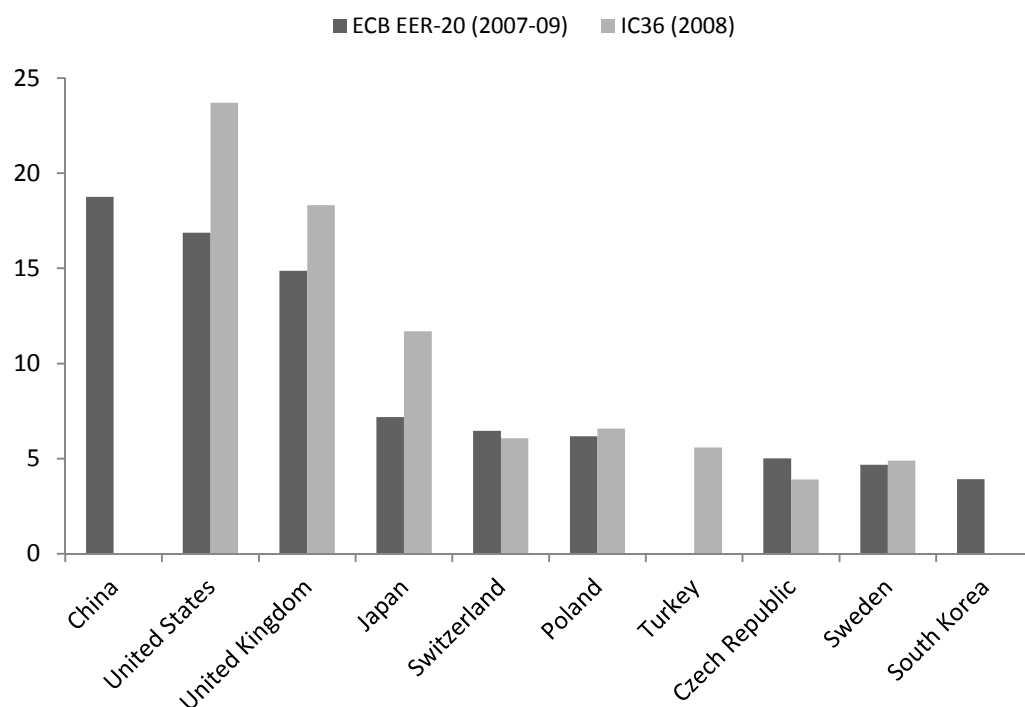|	BIS		ECB		European Commission	
	B61	**B27**	**EER-40 / HCI-40**	**EER-20 / HCI-20**	**IC41**	**IC36**
Major trading partners	Australia	Australia	Australia	Australia	Australia	Australia
	Brazil		Brazil		Brazil	
	Canada	Canada	Canada	Canada	Canada	Canada
	China	China	China	China	China	
	Hong Kong SAR	Hong Kong SAR	Hong Kong	Hong Kong	Hong Kong	
	Japan	Japan	Japan	Japan	Japan	Japan
	South Korea	South Korea	South Korea	South Korea	South Korea	
	Mexico	Mexico	Mexico		Mexico	Mexico
	New Zealand	New Zealand	New Zealand		New Zealand	New Zealand
	Norway	Norway	Norway	Norway	Norway	Norway
	Singapore	Singapore	Singapore	Singapore		
	Russia		Russia		Russia	
	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland
	Turkey		Turkey		Turkey	Turkey
	United States	United States	United States	United States	United States	United States
European Union countries	Bulgaria		Bulgaria	Bulgaria	Bulgaria	Bulgaria
	Czech Republic		Czech Republic	Czech Republic	Czech Republic	Czech Republic
	Denmark	Denmark	Denmark	Denmark	Denmark	Denmark
	Latvia		Latvia	Latvia	Latvia	Latvia
	Lithuania		Lithuania	Lithuania	Lithuania	Lithuania
	Hungary		Hungary	Hungary	Hungary	Hungary
	Poland		Poland	Poland	Poland	Poland
	Romania		Romania	Romania	Romania	Romania
	Sweden	Sweden	Sweden	Sweden	Sweden	Sweden
	United Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom
Smaller trading partners	Algeria		Algeria			
	Argentina		Argentina			
	Chile		Chile			
	Colombia					
	Croatia		Croatia			
	Iceland		Iceland			
	India		India			
	Indonesia		Indonesia			
	Israel		Israel			
	Malaysia		Malaysia			
			Morocco			
	Peru					
	Philippines		Philippines			
	South Africa		South Africa			
	Taiwan	Taiwan	Taiwan			
	Thailand		Thailand			
	Venezuela		Venezuela			
	Saudi Arabia					
	United Arab Emirates					
Euro area countries	Austria	Austria	Austria	Austria	Austria	Austria
	Belgium	Belgium	Belgium	Belgium	Belgium - Luxembourg	Belgium - Luxembourg
	Cyprus		Cyprus	Cyprus	Cyprus	Cyprus
	Estonia		Estonia	Estonia	Estonia	Estonia
	Finland	Finland	Finland	Finland	Finland	Finland
	France	France	France	France	France	France
	Germany	Germany	Germany	Germany	Germany	Germany
	Greece	Greece	Greece	Greece	Greece	Greece
	Ireland	Ireland	Ireland	Ireland	Ireland	Ireland
	Italy	Italy	Italy	Italy	Italy	Italy
	Luxembourg		Luxembourg	Luxembourg		
	Malta		Malta	Malta	Malta	Malta
	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands	Netherlands
	Portugal	Portugal	Portugal	Portugal	Portugal	Portugal
	Slovakia		Slovakia	Slovakia	Slovakia	Slovakia
	Slovenia		Slovenia	Slovenia	Slovenia	Slovenia
	Spain	Spain	Spain	Spain	Spain	Spain

Note:
EER-20 and EER-40 groups of trading partners do not include euro area member states. These are included in the corresponding groups for the calculation of HCIs-20 and HCIs-40, which represent the harmonised competitiveness indicators for individual euro area countries.

Chart 1 compares the trade weights of the ten largest trading partners of the narrow groups as calculated by the ECB and the European Commission (EC). Both include, besides EU Member States, major industrialised countries and emerging economies (19 and 20 partner countries for the EC and ECB, respectively). It is however noticeable that China is not included in the EC's basket, while it is the largest trading partner of the euro area since

2007 based on the ECB index. Furthermore, South Korea is not featured in the European Commission's index, while Turkey is. The scoreboard indicators of the EC (see Section 3.2) are based on this group of trading partners. This different composition of the basket explains higher weights (in absolute term) assigned in the EC indicators for the remaining partners such as the United States and United Kingdom.

Chart 1: Top 10 trading partners of the euro area in the narrow EER groups
(percentages)

Note:
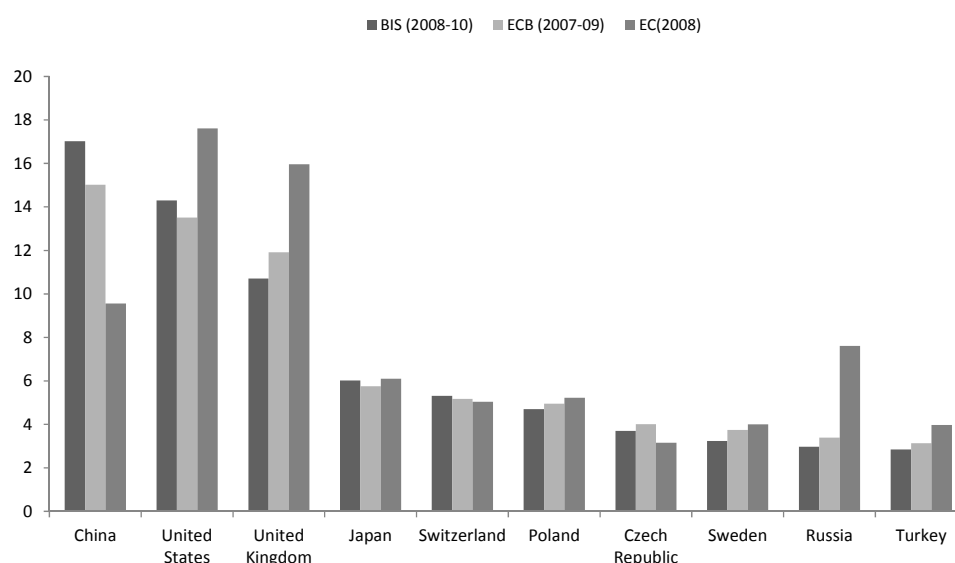ECB (2007-2009) are trade weights in the period indicated referring to a group of 20 trading partners.
IC36 (2008) are trade weights of the European Commission in 2008 referring to a group of 19 trading partners.

Data shown in Chart 2 refer to the larger groups of trading partners for the euro area. To account also for smaller partners (in terms of trade) the BIS calculates the EERs of the euro area vis-à-vis a group of 42 partner countries (subtracting the euro area Member States from the group of 61 partners), while the ECB calculates EERs for the euro area vis-à-vis 40 partner countries. Finally, the EC includes 24 partner countries in its broad indicator for the euro area.

China is ranked to be the biggest competitor for the euro area according to the ECB and BIS. In the EC indicator, China only is the third largest competitor following the United States and United Kingdom, as the EC indicator does not reflect import trade weights. Moreover, it is striking that Russia is the fourth largest trading partner according to the EC, while it has the ninth position in the BIS and ECB indices.

Chart 2: Top 10 trading partners of the euro area in the broad EER groups
(percentages)

Note:
BIS (2008-2010) are trade weights in the period indicated referring to a group of 42 trading partners.
ECB (2007-2009) are trade weights in the period indicated referring to a group of 40 trading partners.
EC (2008) are trade weights of the European Commission in 2008 referring to a group of 24 trading partners.

2.3 WEIGHTING METHOD

Generally, EER indicators based on Turner and Van't dack (1993) gauge three types of competition between a domestic country *i* and a foreign country *j*:

- The import competition between countries *i* and *j* in market *i;*
- The export competition between countries *i* and *j* in market *j;*
- The competition of countries *i* and *j* in all other markets.

The overall weight of a partner country considered in a group of trading partners is obtained by summing up the weighted average of import and export weights. Calculating

the weight for imports is straightforward, as it consists of the simple weight of a partner relative to all partners' imports.

It is different for the export weights, because the method generally applied includes the competition arising from a partner's domestic production and third market effects. Accounting for third market effect is important, as is for instance demonstrated by the development of the euro area's trade with China (see Schmitz et al., 2012). In the ECB indices, China is the largest trading partner of the euro area in the period 2007-09, also because of the competition between the euro area and China in all other markets. Hence, on the one hand, the euro area faces competition from Chinese manufacturers on the Chinese market; while on the other hand, competition between euro area and Chinese exporters takes place on third markets.

The third market effect is taken into account in all EERs discussed in this paper. However, import competition between two countries in the domestic market is not considered in the EC's EERs.

2.4 UPDATES OF TRADE WEIGHTS

Both the ECB and BIS use three-year non-overlapping averages of trade data which are updated every three years, while the European Commission updates the weights on an annual basis using yearly data, with the latest weights available up to 2008. Finally, the IMF does not update the weights at a regular frequency, but at infrequent intervals.

In particular for the ECB, updates of trade weights for the euro area occur in two instances. One is the enlargement of the euro area to new member countries, which involves the enlargement of the basket of currencies in the narrow and larger groups; the second case is the regular updating of the underlying trade weights.

In the first case, new codes are assigned to the narrow and broad groups of trading partners, which are revised backwards, with the exception of series accounting for the historical development of the euro area;[5] for the Harmonised Competitiveness Indicators (HCIs) calculated for single euro area countries, the composition of the groups remain stable, as the basket includes all euro area member states separately. Therefore, the

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[5] These series change only from the date of the enlargement and are not revised backwards due to the changed composition.

composition of the narrow group of the HCI counts 37 countries (57 countries for the broad group), whether or not a new country joins the euro area.[6] In the case of regular updates of manufacturing trade data, however, the time series changes over the entire period due to data revisions and chain-linking.

2.5 DEFLATORS

The deflators used for the calculation of the real effective exchange rates as shown in Table 3, widen the scope of the indicators to measure countries' price and cost competitiveness. Both the European Commission and ECB calculate real effective exchange rates, based on:

(1) Consumer price (CPI and HICP where available);
(2) the GDP deflator (PGDP);
(3) Unit Labour Costs in the total economy (ULCE or ULCT); and
(4) Unit Labour Costs in the manufacturing sector (ULCM).

The main feature of these deflators is the underlying harmonisation of concepts. For example, for all European Union country data the Harmonised Index of Consumer Prices is used, while similar national consumer price indices are employed for all other trading partners. GDP deflators are derived from quarterly national accounts. Unit labour costs are calculated as the ratio of the compensation per employee and labour productivity, with labour productivity measured as GDP at constant prices divided by the total number of employees. The European Commission also provides data based on price deflator of exports of goods and services (PX), while Producer prices-based (PPI) EERs are available for the ECB indicators of the narrow-group. BIS indicators are based on CPI deflators, while the IMF calculates CPI deflated EERs for a broad group and ULC-deflated EERs for a narrow set of industrial countries.

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[6] Currently, the narrow group for the HCI includes 17 euro area member states and 20 non euro area trading partners. The broad group for the HCI extends the number of countries to 40 non-euro area partners.

Table 3: Overview of deflators

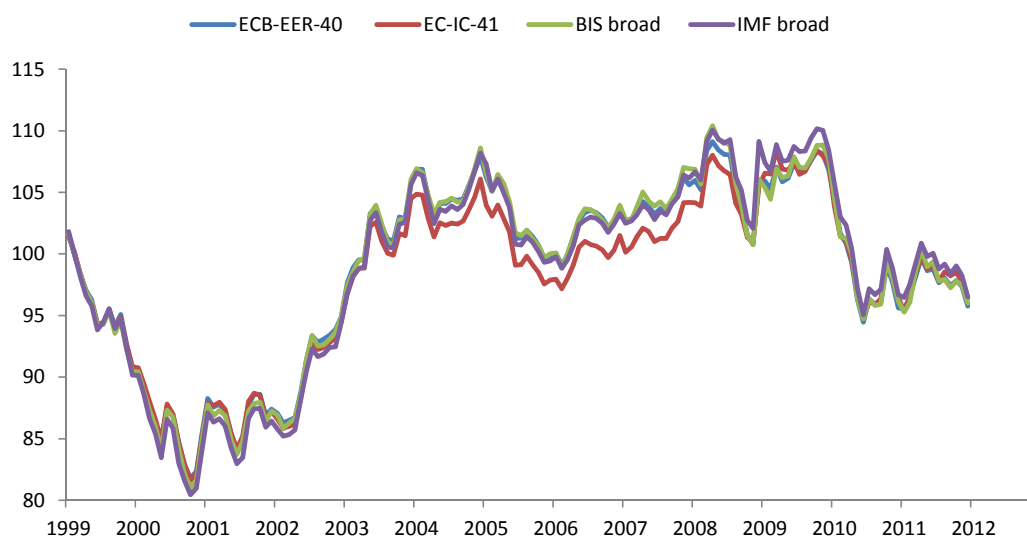| Institution	ECB/European Commission		BIS	IMF	
	Monthly	**Quarterly**	**Monthly**	**Monthly**	**Quarterly**
	narrow/broad	**narrow/broad**	**narrow/broad**	**broad**	**narrow**
Deflators	CPI, PPI*	GDP deflator, ULCM, ULCE/ULCT, PX**	CPI	CPI	ULC

* Only ECB
** Only European Commission

3 QUANTITATIVE EVIDENCE

In this section, we analyse to what extent there are differences in the effective exchange rate indicators published by different international institutions and which methodological features drive those differences. Given the distinction between groups of trading partners, we perform two separate comparisons of available EERs: for the broad and for the smaller groups of trading partners.

3.1 EURO EFFECTIVE EXCHANGE RATES

We compare REERs for broad groups of trading partners based on CPI deflators. This analysis is particularly interesting because it allows explaining the differences of methodologies between different data sources. Euro real effective exchange rates deflated by consumer price indices are visible in Chart 3, while the cross-correlations over the period January 1999 until December 2011 are shown in Table 4. In general there is a very high correlation between these indices, the highest being between the ECB and BIS indices, which are also most comparable from a methodological point of view. In the period from 2004 until 2009, one can observe a slightly lower level of the index computed by the European Commission, which most likely arises from the fact that less partner countries are included in this index.

Chart 3: Selected euro real effective exchange rates deflated by CPI
(January 1999–December 2011)

Source: ECB, European Commission, BIS, IMF.
Note: A decline reflects a depreciation of the euro, while a rise shows an appreciation of the euro.

Table 4: Correlation matrix of broad REER-CPI indicators
(January 1999–December 2011)

	ECB-EER-40	IC41	B61	IMF broad
ECB-EER-40	100.00%			
IC41	99.08%	100.00%		
B61	99.74%	98.99%	100.00%	
IMF broad	99.49%	99.65%	99.22%	100.00%

Source: BIS, ECB, European Commission, IMF.

More heterogeneity is noticeable among REERs for smaller groups of trading partners, where unit labour costs (ULCT) in the total economy are used as the deflator (Chart 4). In fact, over the period January 1999 to December 2011, a divergence of the indices is visible from 2004 onwards. In December 2011 the ECB index reaches the lowest value among the three indices considered, thus indicating a real depreciation of the euro since 1999, while the other two indices point to a real appreciation of the euro. Again, the explanation lies in the trading partners considered in this group of countries, since the ECB index also includes emerging market economies where unit labour costs tend to rise faster than in advanced economies.
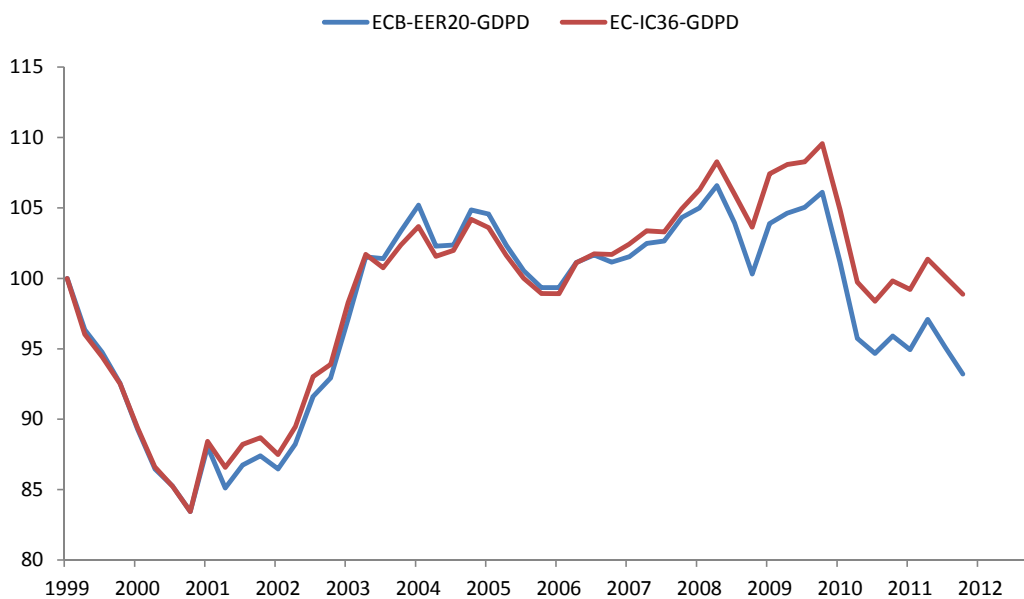
Chart 4: Selected euro real effective exchange rates deflated by ULCT
(January 1999–December 2011)
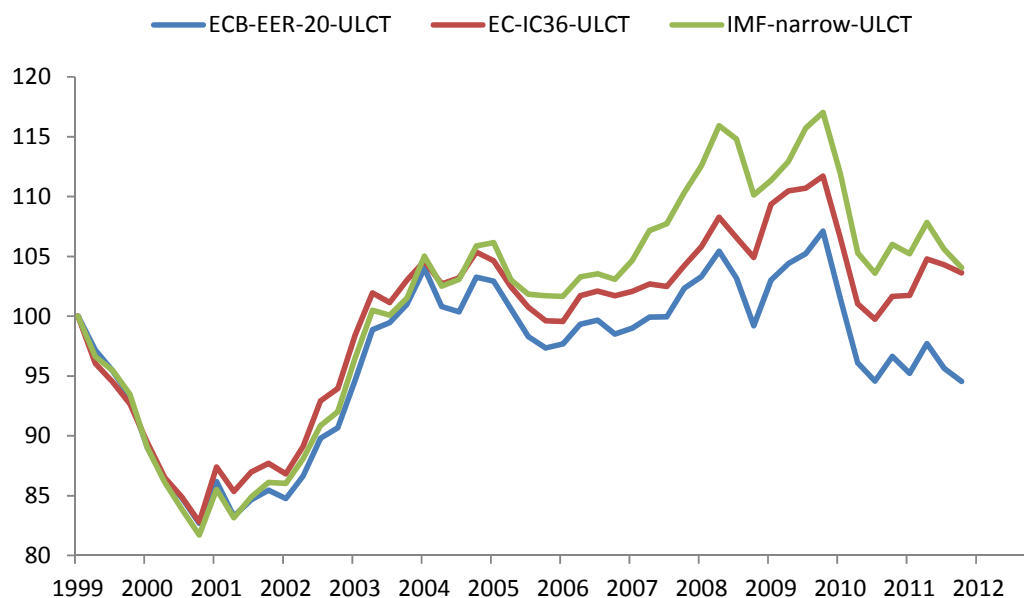
Sources: ECB, European Commission, IMF.
Note: A decline reflects a depreciation of the euro, while a rise shows an appreciation of the euro.

Chart 5: Selected euro real effective exchange rates deflated by GDP deflator
(January 1999–December 2011)

Sources: ECB, European Commission.
Note: A decline reflects a depreciation of the euro, while a rise shows an appreciation of the euro.

A similar pattern emerges when comparing euro real effective exchanges rates deflated by GDP deflators as computed by the ECB and European Commission (Chart 5) and when unit labour costs of the manufacturing sector are used as deflators (not shown in a chart).

3.2 SCOREBOARD INDICATORS FOR EURO AREA MEMBER STATES

In this section, we follow the approach of the European Commission when calculating the scoreboard of the EU's Macroeconomic Imbalance Procedure (see European Commission, 2012). In the scoreboard, percentage changes in the real effective exchange rates (deflated by CPI) of EU countries over a three year period are reported. The latest version of the scoreboard in the European Commission's Alert Mechanism Report (2012) covers the period 2007 until 2010, while in Table 5 we focus on the most recent period 2008 to 2011. The benchmark used in the scoreboard is the European Commission's IC36 index (in the first column of Table 5), which is the smaller of the EC's trading partner groups. We compare this indicator with various CPI deflated REERs for the euro area Member States (Table 5).

Looking at Table 5, a few regularities emerge: the three-year percentage change based on the IC36 indicator shows – for the majority of countries considered – the lowest values (if negative) and the highest values (if positive) across all indicators displayed. Moving to a wider group of trading partners (e.g. the IC41) reveals more negative or less positive numbers, respectively. The same pattern also emerges when moving from the ECB's smaller to the larger group of trading partners. For instance, Germany shows a value of minus 3.8% based on the IC36 index, whereas it exceeds minus 5% in the ECB-40 and BIS (broad) indices. The positive value for the Slovak Republic is highest in IC36, and it is also higher in the EER-20 than in EER-40. This implies that differences in the composition of trading partner groups have a consistent impact on the resulting indicators.

Table 5: Scoreboard indicators for euro area Member States, 2008-11
(percentages)

	IC36	ECB-20	ECB-40	IC41	BIS broad	IMF
Austria	-1.1	-1.6	-2.1	-1.9	-2.4	-1.6
Cyprus	-0.7	-1.9	-2.5	-1.7	-2.8	-1.7
Estonia	0.8	0.7	0.0	-0.6	-0.6	NA
Finland	-1.2	-2.0	-2.9	-2.8	-5.1	-4.4
France	-3.3	-3.6	-4.3	-4.1	-5.0	-3.5
Germany	-3.8	-4.8	-5.5	-4.6	-6.0	-4.7
Greece	2.9	1.2	0.8	1.9	1.1	1.9
Ireland	-9.1	-10.0	-10.5	-9.7	-11.5	-11.1
Italy	-2.1	-2.8	-3.6	-3.1	-3.7	-2.6
Malta	-3.8	-2.8	-3.4	-3.8	-3.8	-3.4
Netherlands	-1.7	-4.2	-4.9	-2.5	-4.5	-2.2
Portugal	-2.2	-2.2	-2.8	-2.9	-2.5	-1.9
Slovak Republic	4.2	3.0	2.5	3.3	2.7	4.0
Slovenia	-0.5	-1.6	-1.9	-1.9	-2.5	NA
Spain	-1.4	-2.3	-2.9	-2.4	-3.3	-1.7

Sources: own calculations based on BIS, ECB, European Commission and IMF.
Note: Scoreboard indicators calculated as percentage change of average REER in year 2011 relative to average REER in year 2008. A negative value reflects a gain in competitiveness, while a positive value shows a loss in competitiveness.

In Table 6, differences in the scoreboard-approach based indicators are highlighted in a more systematic way. We compute scoreboard indicators as in Table 5, but at a yearly frequency starting from 2002 (i.e the three-year change between 1999 and 2002). Subsequently, we determine differences (in absolute value terms) between various indicators and report the average difference for each country and overall.

The difference between ECB and EC EERs for the smaller group amounts to, on average, 0.9 percentage points (ECB-20 vis-à-vis IC36). A similar result is obtained when comparing the smaller with the larger group of partners for the indicators of the European Commission (IC36 vis-à-vis IC41). In contrast, the difference between the two ECB indicators (ECB-20 and ECB-40), as well as the difference between the ECB-40 and the BIS-B61 – which both follow a very similar methodology – reach a value of 0.6. This suggests that the inclusion of the most important trading partners for the euro area such as China (which is not considered in the IC36 index) has a sizeable impact on the indicators. The largest difference with the other indicators is visible for the IMF (1.2 percentage points in comparison to the ECB-40) which might be driven by the fact that the IMF

updates its trade weights less frequently and considers a broader trade basis and set of partner countries.

Table 6: Differences in scoreboard indicators 2002-2011
(averages, absolute value)

	ECB-20 vs IC36	EC36 vs IC41	ECB-20 vs ECB-40	ECB-40 vs BIS broad	ECB-40 vs IMF
Austria	0.5	0.7	0.4	0.5	1.0
Cyprus	1.1	1.1	0.5	0.9	2.0
Estonia	1.0	1.7	1.0	0.5	NA
Finland	0.5	1.6	1.1	0.9	1.2
France	0.6	0.8	0.6	0.4	0.8
Germany	0.9	0.9	0.7	0.4	0.6
Greece	1.1	1.0	0.6	0.4	0.7
Ireland	1.0	0.6	0.6	1.5	1.8
Italy	0.7	0.9	0.7	0.3	0.6
Malta	1.1	0.8	0.6	0.9	1.5
Netherlands	1.9	0.6	0.7	0.6	1.8
Portugal	0.7	0.6	0.5	0.2	0.9
Slovak Republic	1.0	0.7	0.4	1.1	1.7
Slovenia	0.5	1.4	0.7	0.5	NA
Spain	0.7	0.8	0.7	0.3	1.1
Overall	0.89	0.94	0.64	0.63	1.22

Sources: own calculations based on BIS, ECB, European Commission and IMF.
Note: Scoreboard indicators calculated as percentage change of average REER in year t relative to average REER in year t minus 3.

Equivalent results (however with larger differences due to more sizeable fluctuations in the indices) are found if we consider indices deflated by ULCT or GDP deflators (not presented in a table). All in all, Table 6 reveals that there are rather persistent differences between various indicators. While these appear to be small in general, it would still be desirable to follow the same methodology in constructing these indicators – in particular as regards the composition of trading partners groups.

3.3 EFFECTIVE EXCHANGE RATES SIMULATIONS

To help identifying sources of divergences between different indices, we simulate effective exchange rates with different sets of underlying trade weights based on ECB methodologies and calculations. Chart 6 reveals that the number of trading partners matters. In particular, moving from 12 trading partners to 20 trading partners (thus

including more emerging market economies, most noticeable China) leads to substantial changes in the indices. As a large proportion of euro area trade is already covered by the EER-20 group (about 80%), a further move to the EER-40 groups does not have a major impact on the indices.

Chart 6: ECB euro real effective exchange rates deflated by CPI
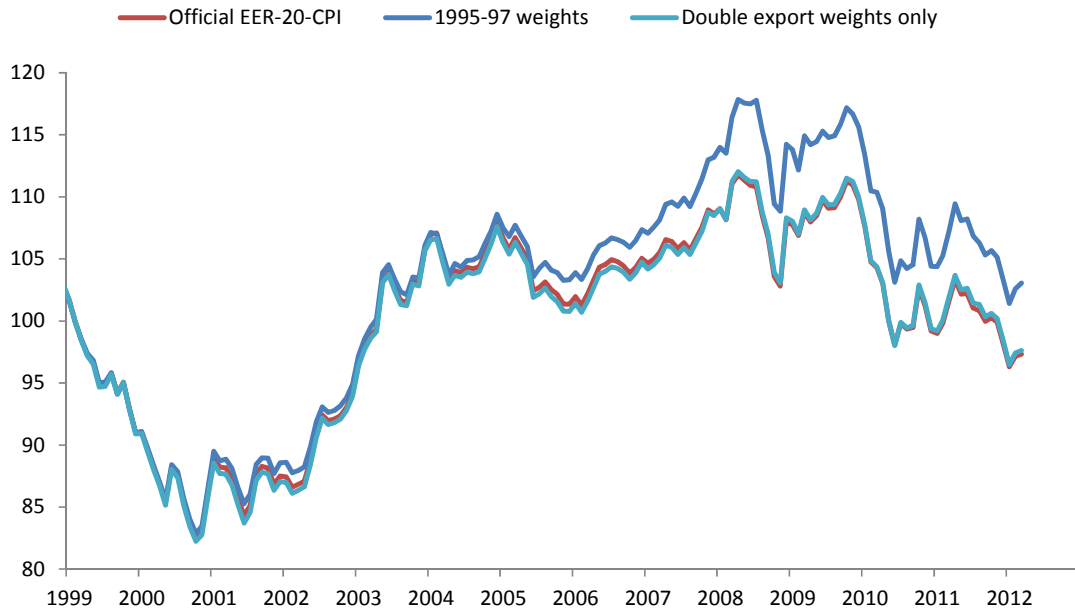(January 1999–May 2012)
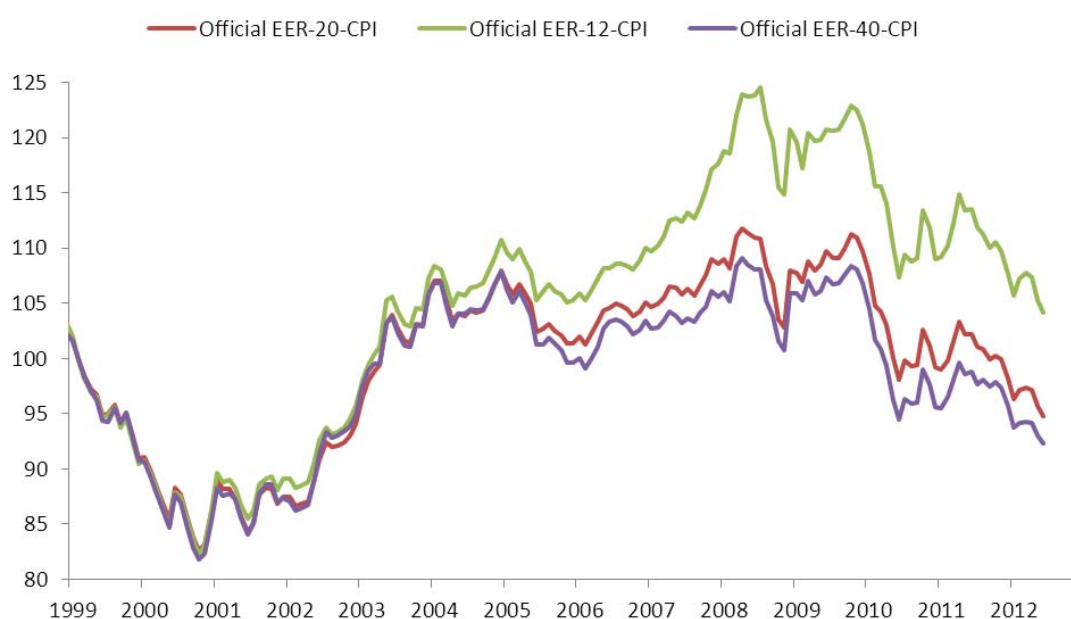
Source: ECB.

In Chart 7, we isolate changes in the methodology regarding trade weights. For the EER-20 indicators deflated by CPI, we first exclude import weights (hence we only consider double export weights, following the European Commission's methodology). We observe that this has only a very marginal impact on the REER index, as in general those countries that are the main export competitors for the euro area also are important sources of imports (Schmitz et al., 2012).

Second, we present evidence on the importance of updating trade weights regularly. To this end, we construct an index that is based over the entire time horizon on the trade weights of the period 1995-97. Chart 7 shows a considerable divergence of this index from the official ECB EER-20 index since 2005. The deviation seems to be driven by the shift in trade weights towards emerging market economies and non-euro area EU Member States (most prominently, the rise of China, as shown in Schmitz et al., 2012).

Chart 7: ECB euro real effective exchange rates (EER-20) deflated by CPI, various trade weights
(January 1999–March 2012)

Source: ECB and own calculations.

Chart 8: Real euro EERs deflated by consumer price indices, different trade weights
(January 1999-March 2012)
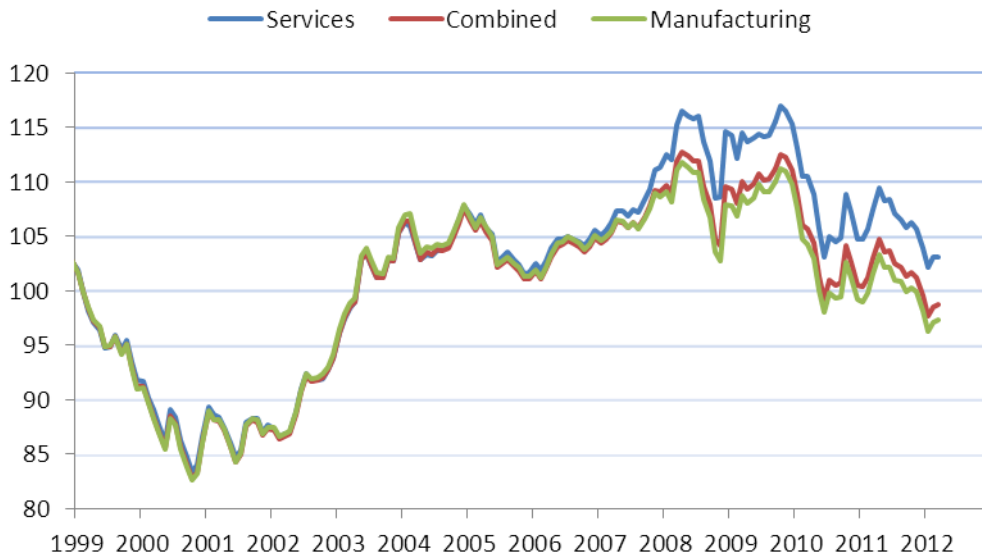
Source: ECB and Schmitz (2012).
Note: A downward movement reflects a depreciation of the euro, while an upward movement indicates an appreciation.

Chart 8 contains three euro real effective exchange rates deflated by CPI: the official REER-20 (based on manufacturing trade weights) is compared to the same indicator based on trade in services and to an index combing both sets of trade weights.[7] In the period since January 1999, the services based REER indicates a loss in price competitiveness of about 3%, while the manufacturing (official) ECB index indicates a competitiveness gain of 2.7%. The combined index indicates a slight improvement in competitiveness by 1.3%.

Including trade in services in the weighting scheme leads to difference in the trade weights (see Schmitz, 2012). For example, the United States and United Kingdom have a much higher weight in services compared to manufacturing trade, while the opposite is true for China. These patterns have an impact on the developments of real effective exchange rate indicators. This is in particular true at the individual Member State level where services trade make up a dominant share of total trade for some countries.

4   CONCLUSION

This paper highlights different methodological approaches to calculating REERs. In general, there is a broad consensus on how to construct these indicators. However, there are observable differences in the REER indicators due to their underlying methodologies. In particular, the choice of partner countries is heterogeneous among indicators published for the euro area. As a consequence, certain events, such as the latest developments of trade with China, taking into account the competition on third markets and China's important role as an exporter to the euro area, is not reflected in all available indicators. Furthermore, trade data used in the weighting schemes are not harmonised across different institutions. Finally, the development of countries' competitiveness may not reflect the most up-to data due to different updating schedules.

Consequently, exchange rate-based competitiveness indicators as computed by different institutions may not always deliver the same policy messages. Our analysis supports a further move towards harmonisation of methodologies, in particular as regards the composition of trading partners groups. We advocate the inclusion of those countries in the indices that represent the major trading partners of the euro area according to the most updated data.

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[7] These are based on Schmitz (2012).

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