



Purchasing Power Parities in Europe – reflections on uses, recent developments and the future of ICP*

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1. Introduction

The first official EU comparison of GDP on a PPP basis was carried out by Eurostat for the year 1975 and covered all the then 9 EU Member States. Since then, the Eurostat PPP program has grown from a five-yearly exercise to an annual exercise covering 37 European countries (Member States and non-Member States). Its development has been closely linked to that of the OECD PPP work as well as to the International Comparison Program (ICP). Annex 1 gives a summary of the history and interrelations of the different international PPP programs.

The EU has one specific use of PPPs that, to some extent, has driven the development of the European PPP program. This is the fact that financial support to the economic development of regions (a large part of the EU budget) is determined partially by their per-capita GDP in PPP terms². This important use of statistical data implied a great need for high quality, comparability and transparency and thereby provided the impetus for the methodological, organisational and legal developments of the program. In particular, it induced the adoption of a Regulation by the European Parliament and the Council in 2007 that made the European PPP program a regular and sustainable element of the European statistical program.

An analogy can be drawn with the use of ICP data for poverty measurement. The World Bank would presumably not have assumed the large role it has today in the ICP if it were not for its own need to establish the tools to monitor the incidence of poverty around the world.

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¹The views expressed in this paper are those of the author only.

² A region is eligible for funding if regional per-capita GDP in PPP terms is less than 75% of the EU average.

But the data needs of the regional development programs or poverty measurement, while important drivers, are not the only reason for producing PPPs. There are many other users and uses. In this paper (section 2) we will describe some of these. Whereas the stated aim of the PPP program is to be able to compare the volumes of GDP and its components, there are also many users primarily interested in comparing prices. Within the EU, the question of price convergence following the introduction of the euro is frequently addressed by researchers. In section 3 we will provide our own analysis of price convergence in Europe.

This paper (section 4) will also summarise some recent developments in methodology and organisation of the European PPP program and will discuss to what extent these developments could impact on the ICP. The ICP is very important to Europe. Without the ICP, it would not be possible to assess Europe's economy against the economies of the main trading partners. Section 5 gives some reflections on the future of ICP from a European perspective.

2. Use(r)s of European PPP data

Besides the above mentioned use of PPPs for the allocation of regional funds, Eurostat's PPPs are used for a wide variety of other purposes. Here's a non-exhaustive list:

- Other statistics produced by Eurostat use PPPs to compile price level-adjusted indicators. The prime user in this respect is of course the national accounts. But PPP-adjusted data are also produced within statistics related to poverty, income, earnings, labour costs, health, education, R&D, etc. In certain cases, PPPs are used to adjust prices. For example, electricity prices are published in euros but also in PPP terms, giving indications of the prices of electricity, relative to other products, in different countries.
- Eurostat also uses PPPs in the construction of EU aggregates. For example, the HICP for the EU is a weighted average of the national HICPs, where the weights are expressed in PPP terms for the non-euro countries.
- GDP per capita in PPP terms and price levels for household final consumption are two PPP-derived indicators that appear in the top of the most requested data on the Eurostat website. That shows there is a high demand from the general public for this kind of data. Eurostat news releases on these topics are always widely quoted in the media.
- Eurostat's PPPs feed into other external databases, for example the economic databases of the Commission and the ECB. They are also taken over by the OECD, the World Bank and the IMF.

These examples refer to the public output of Eurostat's PPP program. Because the margins of error increase as the level of aggregation gets lower, Eurostat does not publish results of comparisons below a certain level of detail.

However, researchers can get access to detailed PPP data, i.e. data that is not published, provided they can deliver a description of the aim of the research and the methods that will be used, as well as a statement of confidentiality saying that the detailed data will not in any way be made public.

Mostly the requests concern PPPs, price level indices and expenditure weights at basic heading level. In incidental cases, also average prices at product level are requested. Interestingly, Eurostat rarely receives requests for detailed per capita volume indices.

Eurostat receives many requests for data under this confidentiality regime, and in practice almost all are accommodated. Some of them lead to scientific publications in well-known academic journals.

An example is the study of Crucini, Telmer and Zachariadis (2005). This article looks at the "Law of One Price" (that identical goods in different countries should have identical prices, once the prices are expressed in common currency units) at a very detailed level of products. Hence, it examines the very notion of Purchasing Power Parity. It concludes *inter alia* that there are roughly as many overpriced goods as there are underpriced goods between any two EU countries. The paper uses data on average prices as were published (!) by Eurostat for the benchmark years 1975, 1980, 1985 and 1990. A recent update of this work, extending the years to include 2005 and 2010, can be found in Glushenkova and Zachariadis (2014).

Berka and Devereux (2013) analyse European real exchange rates (i.e. price level indices) at the level of basic headings, for the years 1995-2009. They note that real exchange rates are highly positively correlated with the internal relative price of non-traded to traded goods. This relationship holds true both across countries and over time. In other words, price level differences are mainly driven by non-traded goods.

The European Central Bank (2011) used detailed average price data to analyse the impact of structural features of the distributive trades on price levels. They conclude, *inter alia*, that there remains a considerable degree of price dispersion across the euro area. Whilst this is lower, on average, for goods than for services, it is still sizeable in most cases. It seems that a limited degree of price convergence has indeed taken place, but that this came to a halt around the period 2004 to 2006. Finally, even after controlling for factors such as income levels and VAT rates, the structural and regulatory features of the distributive trades sector appear to play a role in explaining differences in price levels across countries.

Other studies for which detailed PPP data are requested focus for example on cross-border shopping, competition policy or trade barriers. What is clear from the above is that the interest of researchers is almost exclusively in the detailed comparable price data. Price convergence in particular is a subject of great interest, in particular in the euro area. With this in mind, the next section analyses price convergence since 1995 at an aggregate level.

3. An analysis of price convergence in Europe

In this section, we will give our own light-hearted analysis of price convergence in Europe between 1995 and 2013, based on published PPP data only. The aim is to show what the PPP data can tell us about movements in price levels over time.

Eurostat publishes an indicator of price convergence, which is defined as the coefficient of variation of the price level indices (PLIs) of household final consumption expenditure for a specific group of countries such as the EU28 or the euro area. There are in fact two issues with this indicator:

- PLIs are defined as the PPPs divided by the market exchange rates. Hence, movements in exchange rates can have a profound impact on PLIs, even if PPPs are stable. Stable PPPs mean that the relative price level for the residents of the country concerned is stable (i.e. inflation in that country is at the same level as inflation in the base country). If stable PPPs are divided by fluctuating exchange rates, the results are fluctuating PLIs. But these only mean that the respective country becomes more or less expensive for residents of *other* countries. In any case, the interpretation of the coefficient of variation of PLIs in the presence of changes in market exchange rates is somewhat difficult, as it cannot be concluded whether an increase or reduction of the variation is due to movements of prices or movements of exchange rates.
- Total household final consumption expenditure is not a fully comparable indicator, because it is affected by differences in the share of government in the provision of individual services such as health and education.

For those reasons, we take a different approach in this paper:

- To remove the effect of changing exchange rates, we divide the PPPs for the entire time series (1995-2013) by the average exchange rates over the period 1995-2013 (or for the period for which data exists for a country) to obtain PLIs at fixed exchange rate. For ease of reference, we will call them FPLIs. They are normalised so that for all years the (unweighted) geometric mean of the FPLIs for the EU15 equals 100. As the exchange rates are fixed, the FPLIs show the trends in PPPs only.
- We will investigate the FPLIs for Actual Individual Consumption (AIC). AIC has the advantage that it includes the expenditures of NPISHs and general government on individual services and therefore provides a fuller and more comparable picture of the consumption levels of households. Contrary to GDP, it has the advantage that its PLIs are not affected by the often volatile investment PLIs and the treatment of exports and imports.

Figure 1: Variation coefficients of FPLIs for AIC

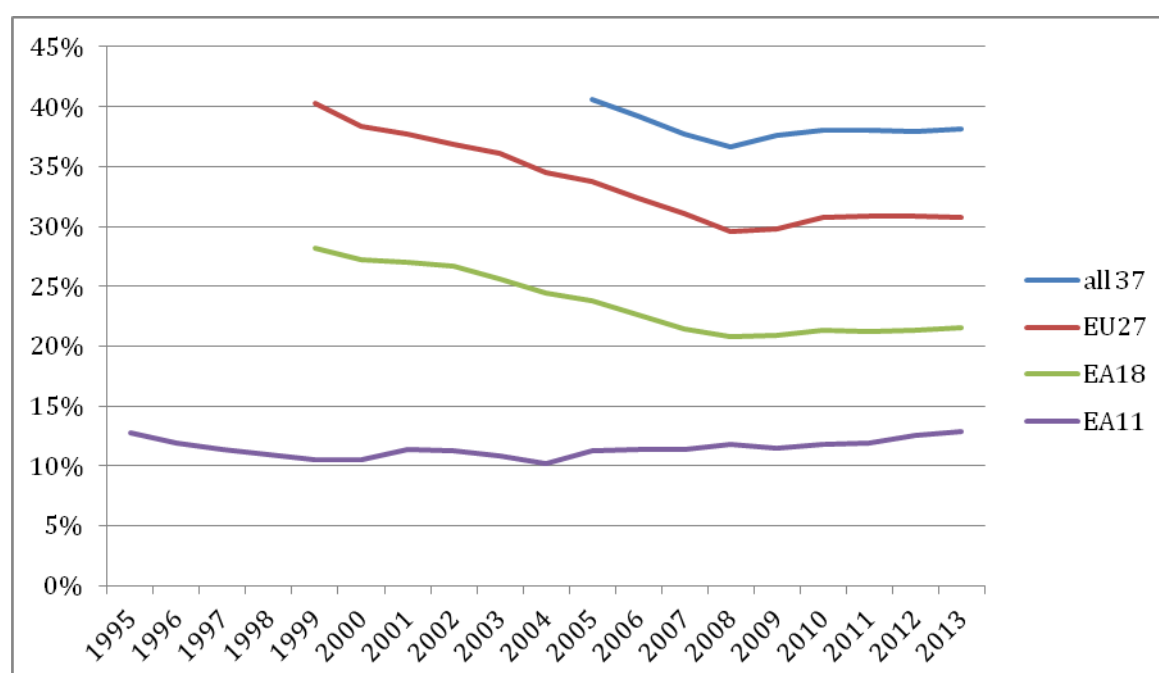


Figure 1 shows the variation coefficients of the FPLIs for four groups of countries: the group of all 37 countries in the Eurostat PPP exercise, EU27, the current euro area (EA18) and the original euro area (EA11). The series are not equally long due to the availability of data. The underlying data are presented in annex 2.

Not surprisingly, the group with all countries has the highest price dispersion (as it includes the expensive EFTA countries as well as the low-price potential candidate countries in the Western Balkan) and the group of original euro area countries has the lowest dispersion. For the three top lines, there is a clear reduction in the variation coefficients, implying price convergence, until around 2007-2008 where the process of convergence seems to have halted or even reversed. For the group of original euro area countries (EA11), price dispersion was somewhat reduced between 1995 and 2005 but has since increased again. It must be noted that, for this group, price dispersion has continued to be very low.

To understand better what's behind this mixed picture of price convergence, figure 2 shows the FPLIs for all 37 countries. This spaghetti-like diagram appears to show a convergence of price levels. On closer inspection, it appears that among the more expensive countries only one, Switzerland, has a significant downward trend. FPLIs for all other countries that are above the average EU15 price level are more or less stable over the entire period. France and Germany moved from being slightly above 100% in 1995 to slightly below 100% in 2013, whereas the UK went in the opposite direction. Iceland went from a FPLI in 1995 from around 80% of the EU15 average to above 150%, i.e. almost a doubling of the price level.

On the other hand, there are several countries below the average price level that are rapidly converging towards that average. The two extreme cases are Turkey and Romania that started from very low levels in 1999 and had very high inflation in the years following. Other rapid risers are the Baltic states (Latvia, Lithuania and Estonia), Slovenia, Bulgaria and Hungary.

The picture that emerges is that price convergence is mainly due to the catching-up of those countries that joined the EU since 2004 or are (potential) candidate countries, but much less to price level adjustments in the more expensive countries.

As the question of price convergence within the euro area is of special interest, figure 3 zooms in on the FPLIs of the current 18 euro area countries. Our convergence indicator in figure 1 indicated convergence of price levels between 1999 and 2005. Figure 3 shows that this is explained by the increases in FPLIs for four of the countries that joined the euro area since 2007 (Slovenia, Slovakia, Estonia and Latvia). Since 2005, hardly any convergence of price levels can be noted. Also within the 11 original euro area countries, price levels converged mainly before the actual introduction of the euro in 1999 and hardly since.

Figure 2: FPLIs for AIC, all countries

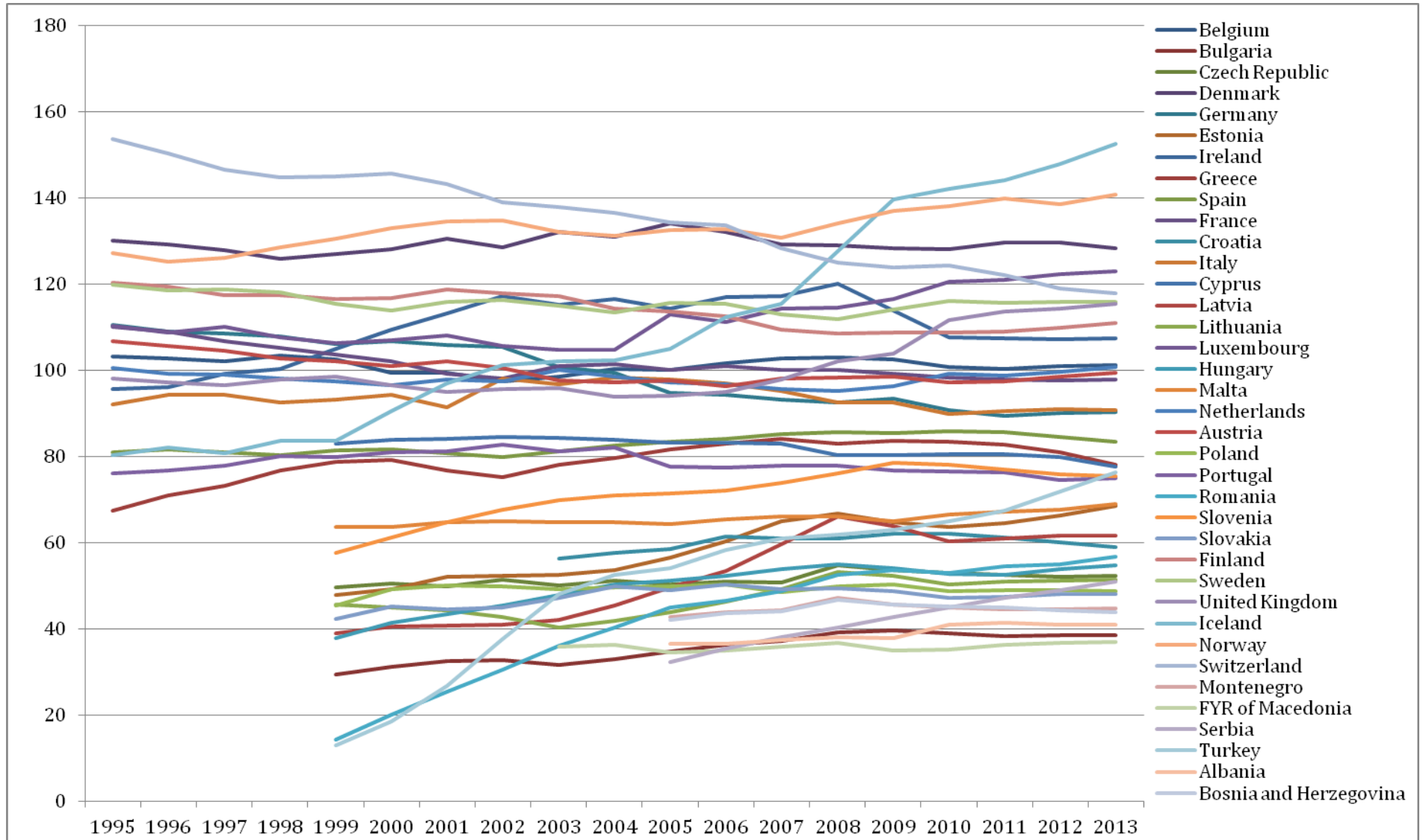
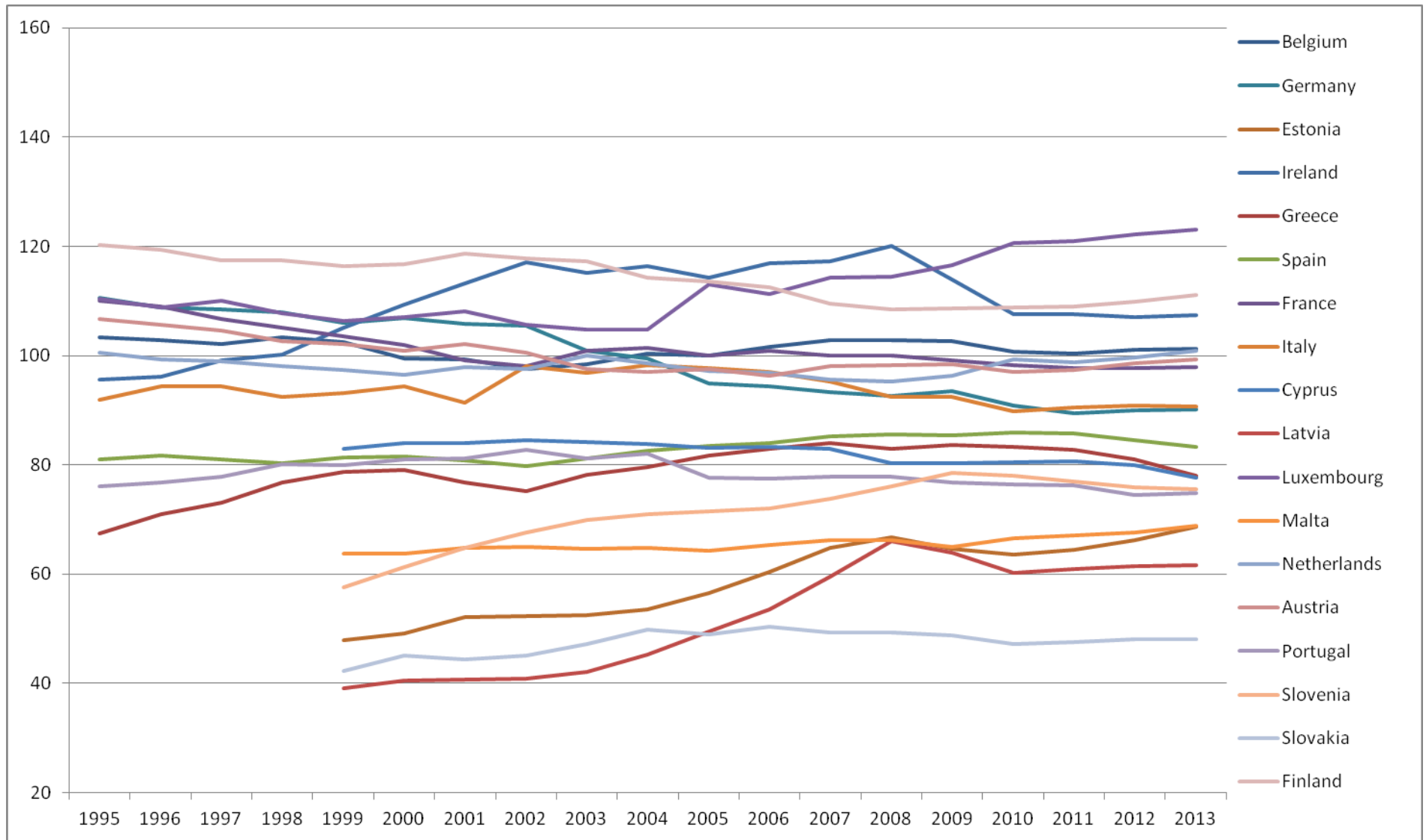


Figure 3: FPLIs for AIC, current euro area countries



As said above, this analysis should be seen as light-hearted. There are other ways of analysing price convergence (see e.g. the report from the European Central Bank (2011) for a discussion). The current analysis stays at the aggregate level, whereas the process of convergence or divergence is much better understood by analysing detailed products or product groups, as done in some of the papers referred to above. But one point that this paper tries to make is to draw attention to the fact that conventional measures of price convergence (variation coefficients of PLIs) are affected by price and exchange rate changes and that the interpretation of changes in the variation coefficients may not be that obvious.

4. Recent and forthcoming developments in the Eurostat PPP program

In 2012, Eurostat and OECD published an updated version of their methodological manual (see Eurostat and OECD (2012)). This manual provides a complete overview of the methodology of the PPP program. This section of the paper describes some developments that occurred after the publication of the manual or are ongoing.

4.1 Education and health

Eurostat strongly believes in the need for measuring the output of non-market services (like education and health) directly, rather than by the traditional method of measuring the inputs of non-market services.

In 2008, Eurostat introduced a new method for education services based on direct measurement of the volume of output of education in the different countries. The quantity of output is measured by the number of students, whereas a quality adjustment is made on the basis of the OECD's PISA study. Details of the method can be found in the PPP Manual, chapter 8.

In 2013, after several years of pilot testing in co-operation with OECD, Eurostat implemented also a new method for hospital and health services. This method is based on the collection of quasi-prices for a set of comparable and representative hospital services, in combination with the use of System of Health Accounts data to provide weights for the compilation of aggregate health PPPs. See the two papers from Koechlin *et al* (2014) for details.

These two new methods significantly improve the methodological basis of Eurostat's PPP program. The methods are feasible in Europe (and OECD countries) due to the availability of good and comparable data. They are less applicable outside these countries. In the 2011 ICP round, this provided challenges to link Eurostat and OECD countries to the ICP regions. For education, a link was established with Latin America that had a sufficient number of countries for which the output method could be implemented. For health, linking could be done through the fact that Eurostat and OECD still collected the data needed for the input approach (wages and salaries for medical and non-medical staff).

It would be recommendable to consider linking methods for these areas well in advance of the next ICP round, in order to be able to collect any additional data that may be needed.

4.2 European System of Accounts (ESA) 2010

All EU Member States are in the process of implementing the new national accounts standards of the ESA2010, which is the European equivalent of the SNA 2008. The first ESA2010 data are to be transmitted to Eurostat by the end of September 2014. There will be significant changes to GDP levels of many countries. Two new features of ESA2010 are particularly important for the level of GDP:

- The capitalisation of R&D
- The capitalisation of military equipment.

The changes in ESA2010 will automatically feed through in e.g. the GDP per capita in PPP terms through the change in GDP. The PPPs themselves are not expected to be significantly affected. For the two new categories above no price collection will be carried out. PPPs for these categories will be estimated on the basis of other categories (“reference PPPs”).

4.3 A new basic heading classification

In 2015, Eurostat will implement a new basic heading classification. Apart from minor adjustments due to the new ESA2010, significant changes will be implemented for the categories under household consumption expenditure. In recent years, Eurostat has worked on a more detailed (5-digit) version of COICOP that is to be used by PPP, HICP and the household budget surveys. Up to now, these three statistical domains use different detailed versions of the COICOP classification. In the coming years, the common 5-digit classification is to be introduced by each domain so that in future the detailed data of these domains can be more easily compared. For the PPP classification of basic headings, the consequence is a significant increase of headings under household consumption expenditure. This is however offset to some extent by a significant reduction of headings under GFCF and government expenditure.

It has not yet been decided to what extent PPPs in the new classification will be calculated backwards to create a coherent time series for researchers.

The new classification will provide some challenges if it were to be mapped to the existing ICP classification in a new ICP round.

4.4 Reorganisation of the consumer goods price surveys

In 1999, the European PPP program was extended to 31 countries, in preparation of the enlargement of the EU in 2004. This brought several organisational challenges for Eurostat, for example in the establishment of product lists that were equi-representative for all countries. It was decided to split the countries in a number (first 3, later 4) of groups. Each group was comprised of countries that were relatively homogeneous thereby making it easier to draw up representative product lists. Each group had a group leader selected from among the countries in the group. The group leader was responsible for: drawing up the product lists for the surveys in consultation with the other members of the group; visiting group members to ensure uniformity of product selection and pricing procedures; and editing the price data provided by group members. The group leaders together with Eurostat were responsible for ensuring that the product lists for the groups had a sufficient number of overlap products at each basic heading so the comparisons could be effected

across groups. The overall results of the reform were smaller more manageable lists, more rigorous pre-surveys, easier selection of products for pricing and improved quality of price data.

This group organisation has worked very well for 15 years and has improved and ensured the quality and continuity of the PPP consumer goods price surveys. However, in 2013 the situation was reviewed and the following points were considered:

- Although there still exist big differences between the countries, there has no doubt been a strong convergence of markets across Europe. It has become more and more common to find the same products in all countries, thereby reducing the need to tailor product lists to different groups of countries.
- Since 2006, the Eurostat PPP program has gradually introduced a set of central IT tools for item list creation, data entry, data validation and aggregation. The use of these tools made the program more efficient and transparent, but also created a push for centralisation, as all 37 countries in the program can see the pre-survey results and prices of all other countries.

It was then decided to abandon the organisation by groups as of 2014. The consumer goods price surveys are now coordinated by one contractor on behalf of Eurostat, instead of the four group leaders. The contractor is a combination of experienced PPP experts in two national statistical institutes. They produce one product list to be used by all countries and validate the data for all countries directly at European level.

4.5 Production PPPs

Traditionally, PPPs are compiled for the expenditure components of GDP. However, there is also a clear user need for PPPs from the production side of GDP. Such industry-level PPPs could be used for comparisons of productivity levels across countries. Currently, industry-level PPPs are produced irregularly by the University of Groningen (see for example Timmer, Ypma and van Ark (2007)). Eurostat started a small-scale internal research project in 2013 to investigate possibilities to produce industry-level, or production, PPPs. The basic approach is similar to that of the University of Groningen researchers, but within Eurostat we can make use of more detailed basic data (for example from PRODCOM, the European survey on production of manufactured goods). The project is still in its infancy; hence, conclusions on feasibility are not yet drawn.

5. The future of ICP from a European perspective

As stated in the introduction, the data produced by ICP are crucial for the EU and for European countries. Without the global PPPs from the ICP, a fair comparison with other parts of the world is not possible. The 2011 round has put the ICP on a firm methodological basis. It has been able to improve and expand significantly upon the 2005 round. The use of PPPs around the world has increased (following their improved availability). The publication of the ICP led to an open and fair discussion of pros and cons of using PPPs vis-à-vis using exchange rates. Generally, the arguments for using PPPs are becoming widely accepted. One of the arguments against PPPs – their low availability and reliability – is nowadays much less strong than it used to be.

This leads to the inevitable conclusion that there is no alternative but to continue producing global PPPs in the future. At the moment, there is however no mechanism that ensures this. The 2005 and 2011 rounds of ICP were *ad-hoc* organizations. The World Bank graciously hosted the Global Office that coordinated the comparisons and footed a large part of the overall bill. The interest of the World Bank in doing this arises from their need for understanding and measuring poverty around the world. At regional level, some regions funded their comparison exercises on their own, but in some others ICP was basically run outside of their regular work program and funded externally.

A stated aim of ICP is statistical capacity building around the world. However, it is questionable whether this aim can be reached when ICP is organized on an ad-hoc basis at irregular intervals. The expertise built up in countries during an ICP round (e.g. in organizing price surveys or improving national accounts) will often be lost again before the next round starts. Also, one clear lesson from the 2011 round, and the problems of extrapolation from 2005, is that a 6-year interval between rounds is too long (and that the methods of extrapolation need improvement).

Therefore, to make ICP more regular and sustainable, it is essential that it becomes institutionalized, at global, regional and national levels. ICP should become a regular part of the statistical work program of the international statistical community.

This requires first of all recognition of this fact at UNSC level. Secondly, it requires the set-up of a permanent Global Office, hosted by an international institution but funded by multiple donors (possibly through a trust fund). The Global Office should be able to recruit international experts in a flexible way, to ensure a level of competence that allows it to be the world leader in PPP methodology.

Donors can be international institutions, but also regional or national institutions, governments, academic institutions, and possibly private funds (e.g. private funds that support developing countries). It is important that the donor contributions are continuous and not *one-off*.

The ICP should remain regionally organized. In some regions, the process of making ICP sustainable has already started. These are the regions in which an institution exists that has recognized the importance of ICP for the region and that has allocated funds. The regional dimension of ICP remains important because regional institutions are closer to the countries' statistical institutions. Regional comparisons are "closer to home" and therefore are more recognizable for participants, will increase countries' involvement as well as regional donor's interest. Also from the methodological point of view, it is recommendable to first compare countries within regions before comparing the regions at global level.

It's however important to strike the right balance between autonomy for a region and their adherence to globally agreed methodologies, product lists and timetables. The Global Office is responsible for the global comparison but not for the regional comparisons. It should focus its attention to organizing the activities needed to compare the regions (the "linking") and to assist those regions that need assistance. Regions should be allowed to operate as autonomously as they desire, but the methodology employed in the regions must allow the comparison with other regions, and ideally the quality of the results must match that of other regions. The regional offices deserve a stronger voice in defining linking methodology than they had in the 2011 round. It remains also crucially important that countries, regions and the Global Office are fully transparent (to each other

and to users) about the methods and sources used. The principle of fixity of regional results should remain: it would be detrimental to credibility if different institutions would be publishing different PPPs for the same countries.

Price surveys should be carried out at regular frequency. If a region or a country has good quality CPI data, it could decide to carry out price surveys on a rolling basis, following the example of the Eurostat-OECD PPP program. The CPI data can then be used to extrapolate the prices forward or backwards to a benchmark year. Ideally, the benchmarks should not be further than 3 years apart. In fact, in terms of statistical capacity building, it is highly recommended for countries to integrate ICP entirely within their CPI programs and thus make it sustainable and improve CPI and ICP simultaneously.

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Annex 1: Chronology of the International Comparison Programme (ICP) and the European Comparison Programme (ECP)

Updated version of Table A from Annex I of the Eurostat-OECD PPP Manual (2012)

| | | | |
|------------------|---|---|---|
| 1950-1960 | 1954 and 1958: Experimental comparisons with 9 European countries and United States carried out by the Organisation for European Economic Cooperation (OEEC). | | |
| 1960-1970 | 1968: International Comparison Project launched under the University of Pennsylvania and the United Nations Statistical Division (UNSD). | | |
| 1970-1975 | Establishing a methodology to allow worldwide comparisons on a regular basis. Three research phases: - 1970 ICP Phase I: 10 countries; - 1973 ICP Phase II: 16 countries; - 1975 ICP Phase III: 34 countries; first official EU comparison organised by Eurostat covering all 9 Member States. | | |
| 1975-1980 | ICP going operational under UNSD. Regionalisation of the ICP. European Comparison Programme (ECP) launched in 1979 under the European Commission of Europe (ECE). The ECP consisted of two groups: Group I covering Western Europe and non-European OECD countries and organised by Eurostat and the OECD; Group II covering Central and Eastern European Countries organised for the ECE by Statistics Austria. In 1996, Group III covering member countries of the Commonwealth of Independent States (CIS) joined the ECP. | | |
| | ECP | | ICP |
| | Group I | Group II and Group III | |
| 1980 | ECP 1980: 18 countries; EKS method applied below the basic heading, GK method applied above. | ECP 1980: 5 countries; Bilateral comparisons with Austria; Quality and productivity adjustments made. | ICP Phase IV: 60 countries; CPD method applied below the basic heading, GK method applied above. |
| 1985 | ECP 1985: 22 countries | ECP 1985: 4 countries | ICP Phase V: 64 countries |
| 1990 | ECP 1990: 24 countries; Adoption of the EKS method above the basic heading for official results; First time all OECD member countries included. | ECP 1990: 7 countries | International Comparison <i>Project</i> renamed International Comparison <i>Programme</i> |
| 1991 | Adoption by Eurostat of the rolling survey approach and annual comparisons of GDP; OECD follows the survey cycle for consumer products but retains a three year cycle for comparisons covering all GDP aggregates. | | |
| 1993 | ECP 1993: 24 countries | ECP 1993: 16 countries | ICP Phase VI: 83 countries; regional comparisons but no world comparison |
| 1996-1998 | ECP 1996: 32 countries; Inclusion of some former Group II countries in Group I (OECD accession countries); Castles Report 1997. | ECP 1996 Group II: 14 countries; Multi-lateral comparison with no quality or productivity adjustments; EKS method applied below and above the basic heading; ECP 1996 Group III: 9 countries; EKS method applied below and above the basic heading; Break | Ryten Report 1998: Main conclusion being that ICP should be relaunched with better management and more resources at global, regional and national levels. |

| | | up of Group II. | |
|------------------|--|---------------------------------|--|
| | Eurostat-OECD PPP Programme | CIS Comparison Programme | ICP |
| 1999-2000 | Eurostat-OECD 1999: 43 countries; ECP Reform: Inclusion of all EU candidate countries in Group I and Division of participating countries into groups; Work on EU PPP Regulation started. | CIS 2000: 12 countries | |
| 2002-2003 | Eurostat-OECD 2002: 42 countries | | Relaunch of the ICP: Establishment of the Global Office at the World Bank in 2003; 2005 to be reference year. |
| 2005 | Eurostat-OECD 2005: 46 countries | CIS 2005: 10 countries | ICP 2005: 147 countries; CPD method applied below the basic heading. EKS method applied above; Regions linked through a comparison of 18 ring or bridge countries. |
| 2006-2007 | Eurostat-OECD PPP Manual published in 2006; EU PPP Regulation passed in 2007. | | |
| 2008 | Eurostat-OECD 2008: 43 countries | CIS 2008 – 5 countries | Results of ICP 2005 published |
| 2011 | Eurostat-OECD 2011: 47 countries | CIS 2011 – 9 countries | ICP 2011: 200 countries; Regions linked through all countries pricing a selection of products from a core list of products. |
| 2012 | Updated Eurostat-OECD PPP Manual published | | |
| 2014 | Eurostat-OECD 2014: 47 countries; Abandoning of group system in Europe | | Results of ICP 2011 published |

Note: Since the 2005 comparison, OECD publishes combined results for Eurostat-OECD and CIS countries with Russia as the bridge country.

Annex 2

| AIC Price level indices at fixed exchange rate | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Belgium | 103.3 | 102.8 | 102.1 | 103.3 | 102.5 | 99.4 | 99.3 | 97.5 | 98.5 | 100.3 | 100.0 | 101.7 | 102.7 | 102.9 | 102.6 | 100.7 | 100.4 | 101.1 | 101.2 |
| Bulgaria | | | | | 29.5 | 31.1 | 32.4 | 32.7 | 31.7 | 33.0 | 34.7 | 36.3 | 37.2 | 39.2 | 39.6 | 39.1 | 38.4 | 38.6 | 38.5 |
| Czech Republic | | | | | 49.7 | 50.4 | 49.8 | 51.4 | 50.0 | 51.1 | 50.4 | 51.0 | 50.8 | 54.8 | 53.6 | 53.0 | 52.4 | 52.0 | 52.2 |
| Denmark | 130.1 | 129.1 | 127.8 | 125.9 | 126.9 | 128.1 | 130.5 | 128.5 | 132.1 | 131.1 | 134.1 | 132.1 | 129.3 | 128.9 | 128.2 | 128.1 | 129.7 | 129.6 | 128.4 |
| Germany | 110.5 | 108.9 | 108.5 | 107.9 | 106.0 | 106.8 | 105.8 | 105.4 | 100.8 | 99.4 | 94.9 | 94.3 | 93.3 | 92.6 | 93.4 | 90.9 | 89.5 | 90.0 | 90.2 |
| Estonia | | | | | 47.9 | 49.1 | 52.1 | 52.3 | 52.5 | 53.6 | 56.5 | 60.4 | 64.9 | 66.7 | 64.6 | 63.6 | 64.5 | 66.2 | 68.6 |
| Ireland | 95.7 | 96.2 | 99.2 | 100.3 | 105.1 | 109.4 | 113.1 | 117.1 | 115.2 | 116.4 | 114.3 | 116.9 | 117.3 | 120.0 | 113.9 | 107.7 | 107.5 | 107.1 | 107.4 |
| Greece | 67.5 | 70.9 | 73.2 | 76.8 | 78.6 | 79.1 | 76.8 | 75.1 | 78.2 | 79.6 | 81.7 | 82.9 | 84.0 | 83.0 | 83.6 | 83.3 | 82.7 | 81.0 | 78.1 |
| Spain | 81.0 | 81.7 | 81.1 | 80.4 | 81.4 | 81.6 | 80.8 | 79.8 | 81.2 | 82.6 | 83.4 | 84.0 | 85.3 | 85.5 | 85.4 | 85.9 | 85.7 | 84.5 | 83.4 |
| France | 110.1 | 109.0 | 106.7 | 105.2 | 103.6 | 102.0 | 99.1 | 98.1 | 100.9 | 101.5 | 100.0 | 100.9 | 100.0 | 100.1 | 99.1 | 98.3 | 97.7 | 97.7 | 97.9 |
| Croatia | | | | | | | | | 56.4 | 57.6 | 58.6 | 61.5 | 60.9 | 61.0 | 62.1 | 62.0 | 61.2 | 60.1 | 59.0 |
| Italy | 92.0 | 94.3 | 94.3 | 92.5 | 93.2 | 94.3 | 91.4 | 98.0 | 96.8 | 98.3 | 97.8 | 96.9 | 95.2 | 92.5 | 92.4 | 89.8 | 90.6 | 90.9 | 90.8 |
| Cyprus | | | | | 83.0 | 84.0 | 84.0 | 84.4 | 84.2 | 83.8 | 83.1 | 83.2 | 82.9 | 80.3 | 80.3 | 80.5 | 80.6 | 79.9 | 77.6 |
| Latvia | | | | | 39.0 | 40.5 | 40.7 | 40.9 | 42.1 | 45.4 | 49.6 | 53.5 | 59.6 | 66.0 | 63.9 | 60.2 | 61.0 | 61.6 | 61.6 |
| Lithuania | | | | | 45.6 | 44.9 | 44.2 | 42.7 | 40.4 | 41.8 | 43.9 | 46.4 | 49.2 | 53.1 | 52.2 | 50.4 | 50.9 | 51.1 | 51.5 |
| Luxembourg | 110.4 | 108.8 | 110.0 | 107.7 | 106.4 | 107.0 | 108.0 | 105.7 | 104.7 | 104.7 | 113.0 | 111.2 | 114.2 | 114.4 | 116.6 | 120.5 | 120.9 | 122.2 | 123.0 |
| Hungary | | | | | 37.9 | 41.3 | 43.4 | 45.3 | 47.8 | 50.2 | 51.1 | 52.3 | 54.0 | 54.9 | 54.0 | 52.8 | 52.5 | 53.9 | 54.7 |
| Malta | | | | | 63.7 | 63.7 | 64.8 | 65.0 | 64.6 | 64.8 | 64.2 | 65.3 | 66.2 | 66.2 | 65.0 | 66.5 | 67.2 | 67.7 | 68.9 |
| Netherlands | 100.5 | 99.3 | 99.0 | 98.1 | 97.4 | 96.4 | 97.9 | 97.5 | 100.0 | 98.5 | 97.3 | 96.8 | 95.5 | 95.2 | 96.2 | 99.2 | 98.8 | 99.7 | 100.8 |
| Austria | 106.7 | 105.7 | 104.5 | 102.7 | 102.0 | 100.9 | 102.1 | 100.5 | 97.5 | 97.1 | 97.6 | 96.4 | 98.0 | 98.2 | 98.4 | 97.1 | 97.4 | 98.6 | 99.4 |
| Poland | | | | | 45.5 | 49.2 | 50.0 | 49.8 | 49.1 | 49.6 | 49.9 | 50.2 | 48.5 | 49.8 | 50.2 | 48.8 | 49.1 | 49.0 | 48.8 |
| Portugal | 76.1 | 76.8 | 77.9 | 80.2 | 79.9 | 80.9 | 81.2 | 82.7 | 81.1 | 82.1 | 77.7 | 77.5 | 77.9 | 77.9 | 76.8 | 76.5 | 76.3 | 74.6 | 74.9 |
| Romania | | | | | 14.3 | 20.0 | 25.3 | 30.5 | 36.2 | 40.3 | 44.9 | 46.5 | 48.9 | 52.6 | 53.6 | 52.9 | 54.6 | 54.9 | 56.7 |
| Slovenia | | | | | 57.6 | 61.3 | 64.8 | 67.6 | 70.0 | 71.0 | 71.4 | 72.0 | 73.9 | 76.0 | 78.5 | 78.1 | 77.0 | 75.9 | 75.5 |
| Slovakia | | | | | 42.2 | 45.1 | 44.4 | 45.0 | 47.3 | 49.8 | 49.1 | 50.4 | 49.3 | 49.3 | 48.7 | 47.2 | 47.5 | 48.0 | 48.1 |
| Finland | 120.3 | 119.3 | 117.5 | 117.5 | 116.4 | 116.7 | 118.7 | 117.8 | 117.3 | 114.3 | 113.6 | 112.6 | 109.5 | 108.5 | 108.7 | 108.8 | 109.0 | 109.9 | 111.1 |
| Sweden | 119.8 | 118.6 | 118.7 | 118.2 | 115.5 | 114.0 | 115.9 | 116.4 | 115.0 | 113.5 | 115.6 | 115.4 | 112.9 | 111.9 | 114.2 | 116.2 | 115.7 | 115.8 | 115.9 |
| United Kingdom | 98.0 | 97.3 | 96.4 | 97.9 | 98.4 | 96.6 | 95.0 | 95.6 | 95.8 | 93.9 | 94.1 | 95.0 | 97.9 | 102.0 | 103.8 | 111.7 | 113.7 | 114.4 | 115.5 |
| Iceland | 80.4 | 82.2 | 80.7 | 83.6 | 83.7 | 90.5 | 96.9 | 101.1 | 102.1 | 102.3 | 105.1 | 112.3 | 115.5 | 127.7 | 139.7 | 142.0 | 144.0 | 147.8 | 152.5 |
| Norway | 127.1 | 125.3 | 126.2 | 128.5 | 130.5 | 132.9 | 134.5 | 134.7 | 132.1 | 131.3 | 132.5 | 132.8 | 130.8 | 134.1 | 136.9 | 138.2 | 139.9 | 138.4 | 140.7 |
| Switzerland | 153.7 | 150.4 | 146.6 | 144.7 | 145.0 | 145.6 | 143.1 | 139.1 | 137.8 | 136.5 | 134.4 | 133.6 | 128.4 | 125.0 | 123.9 | 124.2 | 122.1 | 119.0 | 117.8 |
| Montenegro | | | | | | | | | | | 42.8 | 43.9 | 44.2 | 47.3 | 45.7 | 45.0 | 44.4 | 44.6 | 44.8 |
| FYR of Macedonia | | | | | | | | 36.0 | 36.3 | 34.6 | 35.0 | 35.8 | 36.7 | 34.9 | 35.1 | 36.3 | 36.8 | 37.0 | |
| Serbia | | | | | | | | | | 32.3 | 35.4 | 38.2 | 40.3 | 42.7 | 45.1 | 47.3 | 49.0 | 51.0 | |
| Turkey | | | | | 12.9 | 18.5 | 26.7 | 37.6 | 48.1 | 52.6 | 54.0 | 58.3 | 61.1 | 61.9 | 63.0 | 64.9 | 67.5 | 71.9 | 76.4 |
| Albania | | | | | | | | | | 36.6 | 36.6 | 37.5 | 38.0 | 37.9 | 41.0 | 41.3 | 41.0 | 41.0 | |
| Bosnia and Herzegovina | | | | | | | | | | 42.1 | 43.5 | 44.1 | 46.7 | 45.7 | 45.3 | 45.0 | 44.2 | 43.8 | |
| EU15 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Variation coefficients | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| all 37 | | | | | | | | | | | 41% | 39% | 38% | 37% | 38% | 38% | 38% | 38% | 38% |
| EU27 | | | | | 40% | 38% | 38% | 37% | 36% | 34% | 34% | 32% | 31% | 30% | 30% | 31% | 31% | 31% | 31% |
| EA18 | | | | | 28% | 27% | 27% | 27% | 26% | 24% | 24% | 23% | 21% | 21% | 21% | 21% | 21% | 21% | 22% |
| EA11 | 13% | 12% | 11% | 11% | 10% | 11% | 11% | 11% | 11% | 10% | 11% | 11% | 11% | 12% | 11% | 12% | 12% | 13% | 13% |